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Psittacosis.

A PERSONAL EXPERIENCE.

By R. H. SMYTHE, M.R.C.V.S., Camborne.

Psittacosis in imported birds is not a recently-discovered disease, as accounts of it occur in text books of the last century, but its importance from the aspect of public health has only been fully realised during the past few years. Notwithstanding the assurances of lay writers in the Press, there is a distinct possibility that parrots, years after importation, may act as carriers and may convey infection to other birds of the same or totally different species with which they may come into contact, and it also appears that the disease may remain latent and only appear when undue exposure to cold or some other factor has reduced the powers of resistance; possibly after years of domestication in this country. The writer has encountered several fatal cases in parrots, as long as five years after importation, which have shown all the characteristics of the disease and could not be distinguished clinically from cases occurring shortly after arrival.

Psittacosis, in spite of its name, is by no means confined to the parrot, but is extremely fatal in cockatoos, love-birds and finches, and is apparently communicable to monkeys as well as to mankind.

Outbreaks have been reported in pigeons, but there is a possibility that confusion may have arisen between psittacosis and pneumomycosis due to moulds (*Aspergillus glaucus, ingrescens vel fumigatus* and *Mucor racemosus*) derived from grain, particularly millet. Aspergillosis is also communicable to man and has caused many deaths among pigeon breeders on the Continent. The following account of an outbreak of psittacosis and its transmission to human beings may be of interest :—

In 1924, the writer was asked to advise concerning mortality among birds in a private menagerie. About a dozen parrots, some cockatoos, love-birds and about fifty small finches had recently been purchased from a London dealer. A few finches were dead on arrival and this was attributed, perhaps correctly, to overcrowding in a practically air-tight box. At the time of my first visit, the majority of the birds were moping on their perches, huddled up, with drooping wings and frequently voiding offensive green liquid fæces. Two days later, all the finches, in addition to a few love-birds and several parrots and cockatoos, were dead, whilst the majority of the survivors had ceased to perch and were recumbent on the floors of the cages. Several showed catarrhal symptoms and respiratory distress. A few recovered, but most of the new purchases succumbed. Several days later, the disease attacked some of the original inmates, but owing to early isolation of the new arrivals the disease did not spread to any extent. About this time, a number of monkeys which had been housed with the parrots fell sick. The chief symptoms were pneumonia, accompanied by shivering and depression, so that animals normally vicious could be handled with comparative ease. The mortality in these was not great, only one dying out of about nine affected. Other animals which contracted the disease, or were ill at the time, were two Tasmanian devils, one of which died, and an ant-eater.

About a week later, my wife, who had accompanied me on one of my visits, developed what was diagnosed at the time as influenza, accompanied by bronchitis. Her illness lasted a fortnight, its only peculiar feature being a marked tendency suddenly to fall asleep in the middle of a conversation or whilst reading or otherwise occupied. Shortly after her recovery and at least a fortnight after my last visit to the menagerie, I awoke one morning with a temperature of 104° F. I underwent the usual treatment for influenza and shortly developed an extensive consolidation of the left lung. My temperature chart, recorded every four hours, was a veritable switchback, ranging from 100°–104°, with a maximum at night. About the tenth day my left lung commenced to clear, and the right became similarly affected, and on the eighteenth day of illness, my temperature being then 104°, a consultant was called in, who immediately suggested typhoid. A blood test proving negative, tuberculosis was suspected, but examination of sputum gave a similar result. Ten days later, my temperature commenced to fall by day, with a nightly rise of 2° F. Convalescence was retarded by partial paraplegia, which gradually diminished, but for two years afterwards I was subject to distressing attacks, about twice weekly, of acute dyspnœa, probably of nervous origin, which lasted from half-an-hour to two hours. Throughout my illness, the same inability to maintain consciousness was very apparent, and in the midst of a meal or whilst speaking, the head would nod and for a few moments sleep would take possession. Unfortunately, at night intense depression would occur and sleep was unobtainable.

The third person to be attacked was my *locum tenens*, who developed similar symptoms of a milder type with bronchitis and the same inability to keep awake. Fortunately, his recovery was complete in a fortnight.

I must confess that in the early part of 1924, my knowledge of psittacosis was scanty and although I realised the nature of the disease in the menagerie patients, the possibility of transmission to human beings did not occur to me until, in the midst of my illness, the *British Medical Journal* of August 23rd, 1924, published an article describing similar cases and calling attention to its danger, the high mortality rate (roughly 40 per cent.) and the difficulty of diagnosis.

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Fortunately, if curiously, neither the owner of the menagerie nor the attendants contracted the disease.

"No Cause for Alarm."

Under the above heading (which it quotes) *The Times* of Wednesday last says:—"Anxiety among owners of parrots at the reports of psittacosis from various parts of the world is not shared by veterinary surgeons or by the veterinary profession. At the Zoological Gardens during the last 100 years no such case has occurred, and though it is believed at the Royal Veterinary College that the particular organism is peculiar to parrots, cases of infection are said to be very rare.

"The rarity of the disease in human beings is also reflected in the fact that no detailed study of it has been made at the London School of Hygiene and Tropical Medicine, and, in the absence of sound information concerning it, there is a tendency among certain medical men to doubt its existence. It has been suggested, for instance, that all the examinations made so far have shown a whole series of different microbes such as are to be found in any dirty food. To establish a disease definitely, it is necessary to make a pure culture of the microbes from the case of infection, infect a healthy creature with it, and obtain the diseased condition in that creature, and then take from it another pure culture. Until psittacosis has been proved in that fashion there will remain a body of sceptical opinion on the subject."

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In further reference to this subject, *The Times* of the same date proceeds:—

"Sir Peter Chalmers Mitchell, secretary of the Zoological Society, offered reassurance yesterday to owners of parrots. He said that never in the last 100 years had there been at the Zoological Gardens any indication of a disease corresponding to that diagnosed in New York, Berlin, Birmingham, and Switzerland and attributed to parrots. Information concerning the disease was always vague, but if such a disease existed people who had kept parrots for a long time need not have the least fear of it arising spontaneously in them.

"Professor G. H. Wooldridge, of the Royal Veterinary College, agreed that there is no cause for alarm. He said that the particular organism which produced psittacosis was characteristic of the parrot, but that corresponding organisms were to be found in all species. There was a chance of a person occasionally contracting the disease from a parrot, but it was absurd to raise a scare because of an odd case here and there. The smallness of the risk was shown by the fact that many dealers were handling parrots regularly and yet no case of the disease had occurred among them."

Death from Psittacosis.

Mr. Charles Gardner, of Warwick, who with his wife, was taken to Birmingham Hospital suffering from psittacosis (parrot fever), died on Saturday last. Mrs. Gardner is recovering. She and her husband are thought to have caught the infection from two parrots which died in their house.

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A few cases of parrot fever having been reported, the Federal Veterinary Service has prohibited the importation of parrots into Switzerland.

Chronic Hæmaturia of Cattle.*

By J. F. Craig, M.A., M.R.C.V.S., Principal, Veterinary College of Ireland.

In considering what subject I should bring before you for discussion, it appeared to me that my choice should lie among those which would have a clinical interest and of which you might have some experience, and yet of a kind which had not recently received attention at your meetings.

I therefore thought that Chronic Hæmaturia of Cattle might be an appropriate subject. So far as I know, it has not been discussed by this Society, and yet I have reason to believe that the disease is not uncommon in certain areas of Wales. I am also informed that it has been observed in other parts of Great Britain, as in the North of Scotland, within recent years, and in Cornwall.

My experience of this disease only goes back as far as 1917. I have no evidence that in Ireland the presence of chronic hæmaturia in cattle was suspected prior to 1916, but I have no doubt that it has existed unrecognised in that country for generations. Probably the disease was passed over as a chronic form of red water and such cases were only investigated when more attention was being paid to cattle with the increase in their value during the war. Since our first recognition of the disease in 1917 we have been able to confirm its presence in various parts of the country (Ireland) and we can say definitely that it is not uncommon, although it cannot be compared in prevalence with say Protozoal red water in cattle. It is not possible to indicate its exact distribution, but generally speaking it is in the poorer districts that chronic hæmaturia has been noted.

It appears on farms widely separated and without any apparent connection between them. The conditions on these farms are very similar. Much of the land is poor, neglected and badly drained. Some of it is sour and wet. A good deal of it has never been cultivated or has for a long time gone out of cultivation and has received no dressing of artificial manures such as lime or phosphates within recent years. The pasture is old and coarse, and among the herbage may be found a varying amount of moss, gorse, bracken, arum, iris and sedges, but it may also be stated that similar herbage has been observed on neighbouring farms which are free from the affection.

Animals Affected.

Chronic hæmaturia, as we have seen it, is confined to cows, and seldom affects animals under five or six years. Frequently it is observed in older animals, say from 8 to 12 years old.

As a rule it appears sporadically. In most farms a single animal becomes affected at a time, but these single cases keep cropping up at varying intervals. In one herd, at least seven or eight cattle have been affected since 1916. Occasionally two, three or four cows show the symptoms at one time, and in two small herds that has been a recent experience. In one herd it is reported that very few cows kept over the age of five or six years have escaped the affection.

A feature of the disease is that cattle become affected only when they have been bred and reared on the place, or have

* Presented to the North Wales Division, N.V.M.A., at Chester, on November 28th, 1929.

been grazed on the farm for a number of years. It would, therefore, appear that whatever the causal agent may be, it must be operating for a long period before symptoms develop.

Symptoms.

The symptoms of chronic hæmaturia are of a chronic nature and often commence at the beginning of winter. The first change to be noted is a temporary discoloration of the urine. The urine becomes red or brown and may contain blood clots. Sometimes only the latter part of the urine passed shows any discoloration. There may also be some straining. Otherwise the cow appears to be in good health. It feeds and ruminates normally, it is quite bright, there is no rise of temperature nor change in the pulse, and there is no diarrhœa nor constipation. On rectal or vaginal examination one may make out some thickening of the wall of the bladder. If a sample of the brown or red urine is taken and allowed to stand, a red deposit will be thrown down and the supernatant fluid becomes yellow and transparent. These symptoms may disappear after a few days or weeks, and after some weeks or months may reappear. The attacks develop afterwards at increasingly shorter intervals and remain for longer periods. After a time—it may be months or a year or more—the passage of blood in the urine becomes constant. The amount of blood various very greatly. Sometimes there is only a trace, while in extreme cases there may be so much blood that the urine sets to a red jelly on standing.

Course.

The course of the disease varies from months to years. We have known cases to last for from two to four years, but deaths have been reported as occurring in cows which were affected for not more than two or three months. As a rule, once the disease appears the animal is not likely to recover. In some cases the urine clears up and hæmaturia is absent for such long periods that it has been thought that a cure has been effected and that the animal has completely recovered, but the symptoms recur. Excitement and exercise, pregnancy and poor feeding will accelerate the onward march of the disease.

When there is a continuous passage of large quantities of blood in the urine over long periods, the cow loses condition and becomes anæmic. The mucous membranes and unpigmented skin become pallid, the animal becomes debilitated, it may have difficulty in rising and is readily fatigued on slight exercise, showing marked respiratory distress. Dropsical swellings also develop in the submaxillary space and dewlap, and in the very last stages diarrhœa may appear. Sometimes cystitis or pyelonephritis may arise as complications from secondary infection, and these complications will tend to aggravate the symptoms of hæmaturia.

Examination of the Urine.

We have had a number of affected cows under observation in the College for periods varying from two months to two years, and they were subjected to daily inspection. The urine was examined daily, or at regular intervals of a few days. The samples were examined for specific gravity, reaction, blood content, albumen, micro-organisms and crystals. In two cases only did the urine clear up temporarily and then only for periods of from two weeks to two months. The specific gravity of the urine varied from 1,026 to 1,034, the reaction was usually alkaline, occasionally acid, and the amount of albumen present varied from ·01 to ·2 per cent. The urine was centrifuged and it was found that the solid elements of the blood were thrown down as a red deposit while the supernatant fluid was amber yellow as a rule, rarely slightly tinged red from hæmolysis, clear and transparent, occasionally opalescent. The percentage of deposit varied greatly from a trace to ·1 to 2 per cent. usually, rarely 4 to 8 per cent. In the latter instances it was estimated that the cows were passing ½ to 2 pints of blood daily in the urine. The deposit consisted chiefly of red corpuscles, some leucocytes, a few flat epithelial cells and blood platelets. The red corpuscles presented little or no alteration save that connected with anæmia. Among the leucocytes eosinophilous corpuscles appeared to be present in an unusually high proportion. The proportion varied from 10 to 28 per cent. Rarely were there any crystals of urinary salts present, and only on two occasions were a few calcium oxalate crystals found. Moreover, bacteria and other organisms were usually conspicuous by their absence. In two of the cases the urine in the later stages came to contain streptococci often in abundance and in long chains, and in one case Preiz-Nocard bacilli were common.

Examination of the Blood.

Blood examinations were also made at intervals and then it was found that when the hæmaturia was severe there was evidence of secondary anæmia in a varying degree. The hæmoglobin content was reduced in one case to 28 per cent., and the red blood corpuscle count was at one time as low as 2,500,000 per c.mm. In the leucocyte count there was what appeared to be a relatively high proportion of eosinophilous corpuscles. As many as 20 per cent. of the leucocytes have been found to be of this type. No organisms were ever observed in blood films and certainly no piroplasms.

Lesions.

As to the lesions, it may at once be stated that the essential changes are confined to the urinary bladder. In the kidneys there may be noted sometimes a few areas of interstitial nephritis or some pyelonephritis. In addition, one may find a few small gray or yellow round or ovoid calculi, composed chiefly of calcium carbonate in the calyces of the kidneys.

In the urinary bladder the lesions are scattered over the mucous membrane, particularly along the floor. They consist of bright red spots and patches of varying size. The red patches when closely inspected are seen to be formed of a fine close network of red lines. Through these congested areas red rounded growths of varying size and shape are scattered. Frequently they vary in size from that of a pinhead to that of a small bean, and they are often very firm. Moreover, in other positions little grey nodules may be distinguished. There is no evidence of ulceration. The wall of the bladder may appear to be unusually thick. On microscopic examination of sections prepared from areas of the bladder mucous membrane in which the naked-eye lesions occur a series of changes can be followed. There is at no point an extensive breach of the epithelium, even where the changes in the mucosa are most extensive and profound. The changes involve

particularly the blood vessels of the mucosa and are accompanied by an increase in the surrounding connective tissue. The primary change appears to be an extreme congestion of some of the small thin-walled vessels or capillaries in the mucosa immediately under the epithelium. This is followed by hæmorrhage into the surrounding tissue, and the oozing out of blood on to the surface between the epithelium cells. The little red nodules or growths are composed of an enormously dilated network of large thin-walled vessels separated by layers of dense fibrous tissue of varying thickness. In the latter, extravasations are common. Some of the capillaries are in direct communication with the surface by microscopic openings between the epithelial cells. This tissue is, in spite of this, covered with a complete layer of epithelium. If there has been a cystitis the surface epithelium may be in a state of catarrh. The grey nodules appear to be attempts at recovery, and in them the blood vessels are small, their place being taken by new connective tissue. No worms or their eggs have been discovered in any part of the mucous membrane and no bacteria, even in the complicated cases, have penetrated into the substance of the nodules.

Diagnosis.

The diagnosis of this disease depends upon the examination of the urine. The urine is red or brown, and may contain blood clots. If a sample is allowed to stand, a red deposit will settle in the bottom of the vessel and will be found on microscopic examination to consist of the solid elements of the blood, and this may be noted in an animal otherwise apparently normal. In this way it can readily be distinguished from red water. If the urine cannot be examined it may be noted that the tuft of hairs below the ventral commissure of the vulva is soiled with red urine or blood clot.

Distribution of the Disease Elsewhere.

From what has been said it is apparent that this disease is identical with a chronic hæmaturia of cattle in other parts of the world. It has been recognised in various parts of France for over 80 years, it has been noted in Germany, Belgium, certain parts of British Columbia, in Kenya Colony in Africa, the Pacific Islands and in Australia. It is evident that although it is confined to certain farms or areas, it has a wide distribution throughout the world. In all areas where the disease appears it is seen under almost identical conditions and presents identical appearances. In some countries bullocks are stated to be affected, and death in these animals may be brought about by obstruction of the urethra by blood clot. This is most liable to be noted where draught oxen are kept. In cows this accident has not usually been observed owing to the comparatively wide and short urethra of the female.

Causation or Etiology.

It may be said at once that the casual agent in this disease has not been definitely determined, but various factors have been thought to be responsible. Since the disease often occurs in areas where red water is common it has been thought that the disease is due to piroplasmosis. That view is probably due to the confusion of hæmaturia with hæmoglobinuria. In this chronic hæmaturia of cattle we have never found any piroplasmata or other parasites in the blood, and this is the experience of other investigators elsewhere. Another view put forward was to the effect that the disease was in some way connected with liver fluke disease. In some of the cattle on which we have held *post-mortem* examinations the livers were quite free from liver flukes or the lesions caused by liver flukes. In the disease there is some resemblance to Schistosomiasis in man, in that hæmaturia is a symptom of the latter disease. Search has been made by us for Schistomata in the portal vein and its veins of origin and for their eggs in the bladder wall and urine without success. Moreover, no Coccidia at any time were discovered in the lesions. Chronic hæmaturia has also been attributed to bacterial infection. We have found streptococci in the urine in three cases—in one of them over long periods—and in one case Preiz-Nocard bacilli in company with the streptococci. In others there was no evidence of bacterial infection. Moreover, inoculation of blood and urine into cattle and the small laboratory animals produced no change. From the circumstances under which the disease appears it is far more probable that the disease is due to some chemical compound or toxic agent which is picked up at pasture and which is fed over long periods. That is suggested by the condition of the pasture and by the fact that the disease is noted in adult cattle only when they have been kept on certain farms for a number of years. But when one comes to decide what that agent is or whether there is some particular plant responsible one can come to no conclusion. In the fields where the animals have been grazing, the pasture is poor, and among the grasses one finds very frequently mosses, sedges, bracken, rushes (*arum maculatum*) and iris plants. But these plants are also found on pastures where the disease is absent. Hadwen, who carried out extensive investigations into the disease as it appeared in British Columbia, came to the definite conclusion that it was due to an abnormal oxalic acid content of the herbage. He set up similar symptoms and lesions by injecting emulsions of oxalates into the urinary bladder, and in one instance by giving a bovine large doses of oxalic acid over a period of two years. Moreover, in natural cases of the disease he observed oxalate crystals commonly in the urine. Whatever may be the cause of the condition with which we have been dealing, we cannot confirm the observation of Hadwen. On two occasions only have we found a few oxalate crystals in the urine of cows affected with chronic hæmaturia in the very many observations which we have made. In addition, chemical analyses have been carried out in connection with the fodder and urine and in no case has there been shown to be an excessive amount of oxalates. In pasture grass from an affected farm the amount of oxalate was shown to be ·051 per cent., calculated as calcium oxalate, and when the grass was dried at 100° C. it contained ·189 per cent. of calcium oxalate, while good hay from another area contained ·177 per cent. The urine was shown to contain only traces of oxalates on chemical examination.

A peculiar feature of the disease which we have noted is that although affected cattle are taken from the farm on which they have contracted the affection and transferred to an area where the disease is not known to exist, they do not recover. One would have expected that if the cause in the form of a toxic or irritant agent was removed that recovery would soon be effected. That does not appear to be the case in our experience. We have had cattle under observation under such circumstances for as

long as two years without any evidence of amelioration in the local symptoms. It is of course possible that the lesions which have been set up by the original agent are kept going by some other subsidiary factor.

The suggestion that the lesion is in reality an angioma does not appear to fit in with the facts. It appears to be only on certain farms that the disease appears. So much for the cause of the disease.

Treatment.

A great variety of medicinal treatment has been experimented with, but it cannot be claimed that any drug used so far can effect a cure. I have tried the following drugs; adrenalin, calcium lactate, bone meal, various salts of iron including tinct. ferri perchlor, oil of turpentine, potassium antimony tartrate, potassium chlorate, anti-hæmolytic serum, lead acetate and tincture of opium, various arsenical preparations including Novarsenobillon and galyl, intravenous injections of 6 per cent. gum acacia in normal saline solution, and atropine sulphate. At best, only temporary improvement was noted and it was always difficult to decide whether the improvement was only a coincidence. Probably the best results were obtained from the use of tinct. ferri perchlor. and oil of turpentine. Improvement in condition generally followed rest in the house and a generous diet. Exertion or manipulation of the animal generally brought about a decided increase in the amount of blood passed in the urine. The observations tend to confirm the experience of observers of the disease in other countries, *viz.*, that by rest and good feeding the animals may be got ready for the butcher and that complete recovery is not to be expected.

Prevention.

As regards preventive measures, we have to look chiefly to the results obtained in other countries such as in France and Canada. There it has been shown that the disease tends to disappear with improvement in the drainage and cultivation of the land and by the use of artificial manures such as quicklime. With the latter agent the sour condition of the soil is corrected, the herbage on the land is altered and improved, and the weeds reduced in number. These are, therefore, the recommendations which one may offer for the prevention of the disease in farms or holdings where chronic hæmaturia is constantly cropping up.

Milk Yields of Shorthorn Cattle.

Five gold challenge cups were offered by the Dairy Shorthorn Association for cows with the highest average milk yield in three years. A record average was attained by the pedigree shorthorn Pencoyd Ringlet 13th, belonging to Mr. Frank Brown, High Hurstwood, Uckfield, with an average of 19,787 lb. Mr. Brown won the cup in the Southern Counties. Three years ago Pencoyd Ringlet 13th, in the herd of Mr. T. P. Preece, Broadward Hall, Leominster, won the cup in the Western Counties. The winner this year in the Western Counties was Captain N. Milne Harrop, of Garthgynan, Ruthin, with Lucy, with an average of 17,525 lb. Other winners were:—Midland Section—Mr. W. J. Borlase, Wooton Manor, Henley-on-Thames, with Wild Rose, average 15,582 lb.; Eastern Counties—Messrs. H. J. and H. G. Martin, Littleport, Ely, with Churchill Bessie 18th, average 13,975 lb.: Northern Counties—Mr. William Pearson, Pilling, Garstang, with Sunflower, average 11,832 lb.—*The Times*.

B. welchii as the Cause of Black-quarter in Sheep.*

By A. D. McEwen, B.Sc., M.R.C.V.S., Veterinary Laboratory, South-Eastern Agricultural College, Wye, Kent.

In this country black-quarter of sheep has been recognised generally from the history of the case and the macroscopic appearance of the lesions revealed at *post-mortem* examinations. The bacteriology of the disease has not been investigated extensively and *B. welchii* is not recorded as a micro-organism responsible for the condition. On the Continent, however, greater attention has been paid to the bacteriology of black-quarter or gas-œdema of sheep, and *B. chauvœi*, *V. septique* and *B. welchii* are all recognised as causal micro-organisms.

The following notes are a record of the bacteriological examination made upon a portion of sheep's muscle which was received from Professor Wooldridge with the information that the muscle came from the neck of a ewe which had died suddenly shortly before lambing, and except for a local lesion in the musculature of the neck, which suggested black-quarter, all the organs appeared to be normal.

The ewe had belonged to a small flock, several members of which had died suddenly, and the history indicated that a common cause was responsible for the losses.

The muscle was received at the laboratory in a fresh condition. It was dark red in colour and of a softer consistency than normal; there was no excess of moisture present, nor any sign of gas formation.

Smears made from the muscle showed a very rich and apparently pure culture of a moderately large, stout bacillus with bluntly-rounded ends. The bacilli stained intensely with carbol thionin blue, and the majority were heavily Gram positive, but some retained Gram's stain in an irregular manner. Sporulating forms and free spores were not seen.

Pure cultures of the bacillus were obtained on serum agar slants incubated anærobically and the cultural characters, fermentation reactions, and morphology of the bacillus were studied.

Cultural Characters.—Surface growths on solid media were only obtained under anærobic conditions. When cultures were made in liquid medium, anærobiasis was secured by means of a seal of vaseline on the top of the medium.

Serum agar surface growths:—Round flatly dome-shaped opaque colonies with regular smooth edges.

Shake agar:—Deep colonies. Opaque and lenticular.

Broth containing minced meat:—Abundant production of gas: the meat turned to a deep pink colour; some disintegration of the meat particles but no distinct digestion.

Milk.—Abundant production of gas: rapid formation of clot; clot broken and greatly fragmented.

Broth containing a small portion of brain tissue and a piece of iron wire:—Production of gas: no blackening of brain, but slight blackening of the sides of the tube above the level of the broth and below the seal of vaseline, the seal having been forced some distance up the tube by the evolution and accumulation of gas.

* This work was carried out at the Research Institute, Royal Veterinary College, London.

Liver digest broth :—Production of gas : medium densely turbid, turbidity clearing in two to three days leaving a small compact deposit and clear supernatant fluid.

Gelatin :—Liquified. (Incubated at 37° C. and after growth had formed, cooled in ice chest before reading the result.)

Fermentation Tests.—One per cent. of the test substance was added to the basal medium, which consisted of peptone water containing a small portion of brain tissue. Fermentation was considered to have occurred when acid and gas were formed.

Glucose, lactose, levulose, saccharose, and glycerine were fermented. Inulin, salicin and mannite were not fermented.

Morphology.—The morphology of the bacilli from 24 hour cultures in broth minced meat medium was similar to that described for the bacilli in the smears made from the muscle, but the bacilli were more uniformly Gram positive.

The cultural characters, fermentation reactions and morphological characters were those of *B. welchii,* and to confirm the diagnosis the neutralisation of the pathogenic properties of the bacilli by a known *B. welchii* antiserum was ascertained.

Through the kindness of Mr. J. H. Mason, F.R.C.V.S., of the Wellcome Physiological Laboratories, Beckenham, I received a supply of *B. welchii* antiserum, and, as difficulty was experienced in obtaining a potent toxin, the protective properties of the antiserum were determined by inoculating mixtures of antiserum and broth cultures into mice and guinea-pigs, the mixture being allowed to stand at room temperature for one hour before the inoculations were made.

Results of the Intramuscular Inoculations of Mice with *B. welchii* Antiserum and Broth Cultures of the Bacillus.

From preliminary tests the L.D. of culture was fixed at 0·25 c.c.

Two mice each inoculated with 0·25 c.c. of culture.
Both dead in 24 hours.

Two mice each inoculated with 0·25 c.c. of culture *plus* 0·1 c.c. of *B. welchii* antiserum.
Both remained well.

Results of the Subcutaneous Inoculations of Guinea-pigs with *B. welchii* Antiserum and Broth Cultures of the Bacillus.

From preliminary tests the L.D. of culture was fixed at 1 c.c.

Two guinea-pigs each inoculated with 1 c.c. of culture.
Both dead in less than 16 hours.

Two guinea-pigs each inoculated with 1 c.c. of culture *plus* 0·1 c.c. of *B. welchii* antiserum.
Severe local reaction œdema and necrosis of subcutaneous tissues and cuticle, but ultimate recovery.

Two guinea-pigs each inoculated with 1 c.c. of culture *plus* 0·5 c.c. of *B. welchii* antiserum.
Both remained well.

At the time these experiments were performed the protective properties of an antiserum prepared against the toxins of a bacillus isolated on several occasions from black-quarter lesions in sheep were tested. The toxins produced by these bacilli are much more potent than *B. welchii* toxin and are not neutralised by *B. welchii* antiserum, but the bacilli themselves closely resemble *B. welchii* in their morphology and cultural characteristics, and confusion between the two might arise. These bacilli probably belong to a hitherto unrecognised, distinct species, and are the subject of a paper in the course of preparation. 0·75 cc. of their antiserum *plus* 1 c.c. of the same broth culture which was used in the experiments on guinea-pigs recorded above, after standing at room temperature for one hour, were inoculated into each of two guinea-pigs. These two animals were found dead in 16 hours.

The *post-mortem* examination of the animals which died from the inoculations revealed infiltration of the subcutaneous tissues and a hæmorrhagic condition and necrosis of the muscles. The abdominal cavity presented a picture of generalised congestion and in the case of mice the urinary bladder generally contained a deep blood-tinged fluid. Smears from the peritoneal fluid revealed bacilli ranging from single vegetative cells to short chains of four individual cells. Long chains were never present.

The complete neutralisation of the invasive properties of the bacilli by *B. welchii* antiserum, together with the *post-mortem* picture and particularly the occurrence of hæmoglobinuria in unprotected animals, confirmed the identification of the bacillus as *B. welchii.*

Summary.

B. welchii has been found as the cause of black-quarter in sheep and its identity has been established on morphological grounds; cultural and fermentation tests; pathogenecity; and the neutralisation of the pathogenic action of culture of the bacilli by an immune serum.

World Poultry Congress.

Demonstrations of Results of Research.

An important feature of the British section of the World Poultry Congress will be a demonstration of the manner in which science is coming to the aid of the poultry-keeper. The Ministry of Agriculture's research institutes and the higher education authorities will participate in this work, and, among other things, special interest will attach to the investigations of Professor R. C. Punnett, of Cambridge, which have already established the practicability of detecting the sex of day-old chickens of certain crosses.

Professor W. B. Mercer, of the Cheshire School of Agriculture, will reveal some important results from in-breeding and out-crossing, and will show how egg yield may be improved by selection. Captain Halnan, of the Animal Nutrition Institute, Cambridge, will demonstrate some striking results from the study of foodstuffs; and Professor R. T. Parkhurst, of the National Institute of the Poultry Industry, will deal specially with practical experiments to ascertain the effects of certain conditions upon laying hens. Another interesting feature will be a demonstration of egg storage and preservation, and as there are 47 known methods of keeping eggs some interesting comparisons will be possible. —*The Times.*

Recent Developments in the Science of Animal Breeding.*

By Wm. C. Miller, M.R.C.V.S.

In the first place, I should like to thank you for the honour you have conferred upon me by inviting me to offer you an address for discussion. You have, perhaps, some courage in thus asking me to address you upon a subject about which I know little or nothing, and I believe I have even greater courage in coming to give you the address.

With your permission, I am going to stretch the word "recent." The work which has been very recently done is not perhaps so well substantiated as that which has stood a longer test of time; and no man can tell just when that which is believed to be true to-day will be untrue to-morrow. You must remember that the whole science of genetics is not more than 20 years old—at least, not the science of modern genetics, and of necessity during the first few years of a science many beliefs have to be discarded. Much of the recent development of the science has been of a comparatively fundamental nature, relating to phenomena which have been observed or studied in plants and in animals which are not of immediate interest to yourselves—such as the banana-fruit fly—*Drosophila sp.*—rabbits, rats, mice, etc. I take it that, important though these fundamental studies may be, you would prefer to hear something which has a bearing on those animals with which you are most commonly in contact.

The first principle which I would ask you to remember is the fundamental one that the animal is not in itself a unit character in inheritance, but is the expression of the sum total of a very large number of independently heritable units; units which may have been expressed in a recent or remote ancestor. For instance, if I may be allowed to use a very elementary illustration for a moment, you are all aware that red calves occasionally appear in a pure-bred herd of Aberdeen-Angus, Galloway, Kerry or Dexter cattle, where the breed colour is black. Now the black of the Angus is fundamentally the same as the black of the Galloway, or Kerry or Dexter, and the nature of the black-producing mechanism in any one breed is a characteristic common to all. The factor which gives rise to red coat colour, and that which gives rise to black coat colour, as well as all other genetical factors (usually designated by the word "gene" nowadays) are definite hereditary units descended through the generations from the common ancestral stock which presumably gave rise to each of the four black breeds mentioned.

Perhaps I may be forgiven for a moment longer if I try to illustrate very briefly why red calves do now and again crop up in a breed where the usual colour is black. Pure black colour, that is *homozygous* black, is dominant to pure red; a black bull mated to a red cow will give all black calves, but each of these calves will have a factor for red coat colour latent in its hereditary constitution, it will be, in fact, a *heterozygous* black. Now heterozygous black, (differing externally in no appreciable way from a homozygous black, and demonstrable only by reference to ancestry or progeny) when mated to heterozygous black will give progeny of which 25 per cent. will be homozygous black, 50 per cent. heterozygous black, and 25 per cent. reds. Since the reds, being recessive, are necessarily homozygous reds, they will give only reds when mated *inter se*. Owing to prolonged selection of black in the breeds mentioned, and the rigid exclusion from the herd book of all reds, the majority of the animals are now homozygous blacks, but here and there an animal is still a heterozygous black, and when two such are mated there is a chance of one in four that the calf will be red. I have diverged from the subject to explain the behaviour of a gene or genes responsible for one character in the animal—black coat colour. Innumerable other genes are contained in the chromosomes and are responsible for all the varying anatomical, physiological and even psychological differences that together serve to make up the individuality of each particular animal. There is strong evidence to suppose that each unit character behaves according to a given rule, but up to the present comparatively few have been studied, and fewer have been worked out so fully that they can be used for controlling defects or effecting improvements in actual breeding operations.

The question of coat colour is often considered to be of academic interest or importance, but at the present time a good deal of attention is being paid to the possibility of a definite association between coat colour and some desirable quality of an economic value, such as early maturity, etc. For instance, it might be asked in this connection: Is the red Aberdeen-Angus calf likely to be any worse an Aberdeen-Angus simply because it is red? Will it develop at a slower rate? If a female, will it yield less milk? Not, remember, simply because it is red in colour, but because the gene or genes giving rise to the red pigmentation in the coat may be associated intimately in the chromosome with a gene which governs a greater or lesser capacity to respond in a desirable direction. These are questions that we cannot at present answer. On the face of it, it seems that there is no such definite association as those mentioned as possibilities above; that the red calf would produce just as good beef as does the black calf, but we do not yet know. Perhaps it does not matter. But in the case of the British Friesian and the Kerry it is unfortunate that we do not know. The slaughter of a red female Kerry calf, or a red and white Friesian, simply on account of the accidence of the red colour may be of the nature of a retrograde step, especially when such a calf is born from a good milk-producing strain. In America, red and white Friesians are not eligible for registration in the herd book, but in Holland they are relatively common and looked upon without disfavour. As a matter of interest, the Holstein-Friesians were nearly all red and white until about 70 years ago, when the black and white Jutlands were introduced to improve the breed.

In the same way attention is being paid to the association between colour and face-patterning and qualities of definite economic value in other animals. There is a belief among certain breeders of horses that the animals which have face-markings most nearly symmetrical about a given median line are the best workers; that better co-ordination of movement can be expected in a hunter which has face and leg markings the same on either half

* Address presented to the North of England Division, N.V.M.A., at Newcastle-on-Tyne, on December 7th, 1929.

of the body; that the Ayrshire or Friesian cow with symmetrical markings has a better capacity for milk production, and so on. Whether associations will eventually be proved or not I do not know; the only value that appears to be associated with symmetry at present is an æsthetic one.

One of the most important developments that have occurred in the science recently is the work done to throw light upon the mechanism of the inheritance of high milk yield. I must point out that an accurate analysis of the genetical factors influencing milk production is exceedingly difficult. I need hardly remind an audience such as this of the great importance of environment upon the productivity of the cow; of the influences exerted by feeding, climate, husbandry, ill-health, temperament of the byreman, milkers, and even of each individual cow herself. Each of these must be given due consideration, but there are still animals which, under optimum conditions, fail to give their maximum response. In addition, age, length of the dry or recuperative period, length of lactation or frequency of service, etc., have all to be taken into account. It is only quite recently that Saunders[1], of Cambridge, Drakeley and White[2], Kay and McCandlish[3], of the Glasgow Agricultural College, and others, have made a study of the importance and influence of these latter. Nevertheless, even making the necessary allowances for all of these extrinsic influences, there are still intrinsic factors inherited in a definite way which result in variation in the milking capacity in cows. Buchanan Smith[4] has recently made an analysis of the inheritance of milk yield in Jersey cows, by determining the amount of inbreeding in high yielding cows by the method of Wright[5, 6]. In this work he shows that there is a strong possibility that milk yield is a sex-linked character. Gowen[7] and his collaborators have shewn that yield is definitely correlated to such heritable characteristics as weight, body length, width and girth, hip and shoulder height, and so on. In addition, size, and shape, of the udder and of milk veins, temper of the individual and so on, have to be considered, so that if the correlations cited are correct, milk yield is even more a complicated character than it might at first appear.

Nevertheless, Smith has shewn fairly conclusively, as I mentioned, that milk yield is sex-linked. Put briefly, and neglecting the steps which led to this deduction, it means that high milk yield is inherited to a great extent from the dam of the sire. The dam of a heifer and the maternal grand-dam must be good producers, but they are not likely to lift the heifer's yield above their own. The bulls born from a high-producing dam transmit to their daughters the high-producing quality, but not through their sons. In the same way a bull from a low-producing dam may be able to lower the yield of his daughters when mated to high-producing cows. To apply this to the realms of practical breeding, it means that, given a good yielding strain of cows in a herd, an examination of the milk-yield of the dam of the stock bull is of far greater importance than any of the yields from the family of the stock bull's sire. To improve the yield in a herd the dam of the stock bull should have a *higher* yield than the average yield of the cows in the herd. The heifers born will give a greater yield, but the bull calves, unless themselves born from very high-producing dams, will not transmit the higher yielding quality.

It must be distinctly understood that this improvement can only take place where conditions of husbandry and environment are uniformly good. High yielders far back in the pedigree are of no use if the immediate parents are poor, since the effect of any great-grandparent, for instance, is only 1·5 per cent. at the maximum, against 25 per cent. from the immediate parents. It should be pointed out that in estimating the yield of a cow for these purposes, correction tables must be used to bring the lactation in any one period down to a standard. Roughly speaking, a heifer's yield is considered as 75 per cent. of what her mature yield will be, while the majority of cows give their maximum yield at not sooner than their 5th or 6th lactation.

This work, while not conclusive, perhaps, is exceedingly important. It must, however, be fully emphasised that any animal, cow or otherwise, will only give a maximum response when not only is she well-bred, but also well-managed. Bad husbandry, feeding and management can easily neutralise the potentialities of good breeding, while the reverse is by no means the case.

This discussion relating to milk-production almost naturally leads to the vexed question of the necessity for a measurement of productivity along other lines. Lord Kelvin's dictum that experimental results are only valid when based upon results that are weighed or measured, should apply to experimental work with animals as far as possible (excluding disease and death). Milk produced by cows can be measured and weighed; eggs can be counted and weighed; wool can be weighed; total amount of beef, mutton or pork can be weighed, but quality, early maturity, economical productivity of meat and other desirable characteristics in the food-producing animals are only available for examination after slaughter, when that particular individual is no longer available for breeding. This difficulty of the measurement of productivity of an animal has been a hindrance to progress in throwing light upon the inheritance of such desirable characteristics as are aimed at by breeders of the present day. While nothing has been done experimentally with the inheritance of beef or mutton qualities in this country as yet, a start has been made in Edinburgh with pigs. A Pig-testing Station has been set up at the Animal Breeding Research Department which will eventually yield very interesting results. The scheme is undertaken to enable a figure value to be placed upon a pen of fattening pigs, or rather the produce of a sow, pure bred or cross bred, which will be truly comparable against other pens of the same or similar breeds or crosses. An owner of breeding sows enters a pen of four pigs for test. The required standard must be reached before the pen is accepted. The sow must have 12 teats, must produce and rear to 60 days of age a minimum of eight pigs (gilts, seven pigs). At 60 days the piglings must weigh 26 lbs. at least, or they are not counted in the eight. Four average individuals are chosen from the litter and sent to the Station for fattening. All pigs in the Station receive the same ration, according to weight. During the first stage, from weaning till 70 lbs. live weight, they receive a balanced ration with an N-ratio of 1 :4·2, containing ten parts per 100 of meat meal, one part per 100 of cod-liver oil, and a mineral mixture of ground chalk or limestone, steamed bone flour, salt and ashes, with a little ferric oxide added. Of this mineral mixture they take what they require. After

reaching 70 lbs. live weight, they pass on to ration No. 2. This has an N-ratio of 1:4·8, with eight parts of meat meal, 0·5 parts of cod-liver oil, per 100, and minerals as before *ad lib.* They stay on this till they reach 140 lbs. weight. From 140 to 220 lbs. (or thereabouts) they receive ration No. 3, with an N-ratio of 1:6·2. This has five parts per 100 of meat meal, no cod-liver oil, but the same minerals as before. They are killed at about 220 lbs., or so soon as they are considered to be well finished, under standardised conditions at a bacon factory, and careful recording of percentage dead weight to live weight, and a number of carcase measurements are made. During the course of the whole test the pigs are weighed at stated intervals (every two weeks at first) and points are scored under three main headings:—1, Prolificacy and mothering abilities of the sow; 2, speed and quality of live weight gains; and 3, percentage killed out, and quality of the bacon characteristics. So far some 100 pens have been passed through, but the results are not all analysed. It is not contemplated making any deductions until about 100 pens of each breed and of each of the main crosses have been put through. Later it is hoped to give a certificate of merit to the owner of each sow which reaches or passes a given good average standard of progeny performance. It is contemplated that, if well supported by the breeders of pigs in Scotland, such a scheme as this will be applicable for determining the value of certain boars for breeding purposes, but obviously before the performance of one boar can be tested against others it will be necessary that a large number of pens shall have been put through the test.

I may be forgiven here if I make reference to what has recently been emphasised by almost everyone concerned in the science of genetics, but what the majority of breeders are loth to adopt, the supreme and absolute method of testing the capacity of breeding dam or sire of any species of domesticated animal—the progeny test. By this is meant the evaluation of sire or dam for breeding offspring of a particular type or possessing particular qualities, by reference to the behaviour of the progeny rather than by reference to the behaviour of the ancestry. The chief reason adduced against a more common use being made of the progeny test is that it takes too long to establish. The average age at which cows cease to be kept as producers of milk varies in different parts, and according to breed and local conditions, but it has been proved quite conclusively that by far the great majority of cows do not yield their maximum amounts of milk per lactation until their 5th to 6th years at least, and by that time their first (heifer) calves will have proved themselves or otherwise. Concerning the bull, there is earlier opportunity to judge his value, for his first daughters have usually completed their first lactation period by the time he has reached the age of three to three-and-a-half years; that is, when he is still in the prime of his life. Another objection to the long continued use of a sire or dam of proved worth is that in old age the quality of the offspring degenerates. Much evidence has been produced to disprove this idea in recent times by an analysis of the performance (showyard and otherwise) of animals born from aged parents, and the concensus of opinion now is that, given health and good management (avoidance of over-fatness, etc.) there is everything to be gained and nothing to be lost by continuing to breed from proved stock-getters so long as they remain physically capable of doing so. The most marked falling off in old age is not in the quality of the offspring, but in the number of the progeny. Sanders[8], by an analysis of the records of Premium stallions in this country, showed that there is a falling off in numbers of about 5 per cent. in old age (15 years). To the members of the North of England Division, I feel sure that it will be unnecessary further to stress this point, but I would like to make a suggestion that the general practitioner in his rôle of guide, philosopher and friend to the stock-breeder has an opportunity to correct certain of these erroneous ideas when he encounters them, in addition to dealing merely with questions of health and disease.

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Discussion.

Professor Heigham offered practical corroboration of the value of the progeny test, by remarking that in Denmark such tests had been conducted on a large scale for many years. They were demonstrated in showyard stock, shown in working condition, where older sires were shown with their stock. He recalled the case of one old stallion whose progeny numbered 127, many of which were prize winners.

Danish show catalogues often showed tables giving the lines of direct and indirect inheritance, similar to the diagrams Mr. Miller had used.

Professor Heigham referred to a Danish Red bull shown with a large number of his female progeny, each with its milk record attached. These records clearly showed the direct advantage conferred on the female by the bull.

Examples such as these, together with the experimental work being carried out, should help to forward the subject as one of practical agricultural importance.

Dr. Wheldon emphasised the value of the progeny test as a measure of productivity. There was a tendency for farmers to become more and more dependent on outside sources for foodstuffs for livestock, though some pedigree herds might be under more favourable conditions.

Primarily the function of live stock was to convert farm foods into saleable products, as, for example, animals or strains from animals killing out good carcases.

The cost of production was an important factor, and it was desirable to utilise more fully foods grown on the farm. Very often pedigree animals did not make the most effective use of foods grown on the farm, and it was important, if possible, to improve this state of affairs.

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Amongst Aberdeen Angus cattle progress required quality, but it was not always possible to get the same live weight increase as in previous years, and the "crossing" bull was rare.

Referring to the progeny test, Dr. Wheldon said that no breed of milk cattle had made greater strides than the Ayrshire. There were more aged Ayrshire bulls than in other breeds, and there was a greater tendency to retain the best breeding animals. Some breeders sent out young bulls for trial, and subsequent return to the herd.

In other cases where older sires are not retained, the bull was often dead before the value of the progeny test could be established.

Mr. W. L. Stewart enquired whether it had been practically proved that milk yield was a sex-linked character, because if so, other characters such as early maturity in cattle and wool yield in sheep might also be found to be sex-linked.

Referring to progeny tests, Mr. Stewart mentioned the case of Dunure Footprint, whose progeny carried all before them in the showyard.

There was also the example of the Ayrshire bull Crusader, which at the age of 17 years was still retained in the herd because of his proved value as a sire.

The pig feeding experiments described by Mr. Miller were important, because the results might indicate whether such characters as early maturity and quality of flesh were sex-linked.

He would have liked to hear something concerning disease resistance. Was there any evidence to support the view that such a character may be transmissible, particularly in view of the fact that strains of chicks had been bred, which were immune to bacillary while diarrhœa?

In conclusion, Mr. Stewart referred to the commonly-held belief in telegony, and after mentioning Professor Cossar Ewart's experiments with the Zebra and the mare, enquired Mr. Miller's views and experience on the matter.

Mr. H. S. Elphick mentioned certain cases which had come under his observation, and asked whether Mr. Miller could offer any explanation.

He referred to a farm where recently-born cats had tails three inches shorter than the normal.

Did foster-mothers, in rearing calves, exert any influence on the subsequent milk yield of such progeny?

Mr. Elphick also said he had a black Sealyham bitch, whose parents and other members of the litter were normal.

Mr. Pawson remarked that breeding records in Denmark were far advanced over anything obtaining in Britain, and he felt sure that the work now being done would do much, in time, to improve matters in this country.

The Reply.

Mr. Miller, in reply, said that the examples given by Professor Heigham clearly illustrated the seriousness with which breeding problems were regarded in Denmark. Many of the ideas for schemes of livestock improvements in this country had been borrowed from Denmark.

It would be a valuable point if progeny tests could be available, somewhat on Danish lines, at such shows as the Royal, and the Highland.

Referring to the proof of sex-linkage of milk inheritance, Mr. Miller said though the point was not finally settled, there was some practical evidence in favour of it.

An Irish milk-producing herd had been managed for some time along lines in accord with the theory, and since the adoption of this course the results had been more successful.

The measure of productivity was important. There was an impression that the live stock of Britain was merely holding its own, but not progressing.

This might be due to the fact that the average level of British stock was higher than that of other countries, consequently progress in those countries would be more pronounced.

He suggested that animals may now be responding as fully as possible to external influences, *e.g.*, foods, and that further progress would necessitate an examination and improvement of their breeding potentialities.

He had tried to get average figures for the ages of sires and dams, and so far had secured figures for Ayrshires, which gave the average age of bulls as 3·9 years, and cows as 6·4 years. Possibly this was because Ayrshires did not tend to put on the same amount of fat as some other breeds, especially Shorthorns. Excess of fat resulted in a tendency to degenerative changes in the sex glands and consequent infertility.

The speaker was more intimately concerned with wool problems, and there was a possibility that increased wool yield was a sex-linked character. There was also reason to believe that milk secretion and wool production, being both skin activities, obeyed the same genetical laws.

Dunure Footprint appeared to be an example of the value of the progeny test, but it should be remembered that the fashionable horse in the showyard was not always the best type of horse for commercial purposes, and high showyard success did not necessarily indicate breed progress.

The problem of disease resistance had not appreciably advanced since the subject was discussed at the Newcastle Congress, though a strain of pigs had been produced which was supposedly resistant to swine fever, and similarly a strain of cows having a high resistance to contagious abortion.

He had not heard of any influence exerted by a foster mother on the hereditary constitution of the young animal.

Every animal possessed certain in-born potentialities, to which it would respond if well managed; hence environment was a very important factor.

The black Sealyham was interesting, possibly it was a mutation. Since there was no pure breed of dogs, canine genetics were much confused.

Rabies in Imported Dogs.

Two cases of rabies have recently been confirmed in imported dogs which were undergoing quarantine on veterinary premises in accordance with the Ministry's regulations. One of the dogs came from India and the other from Portugal.

Since the end of the war, ten cases of rabies have now been confirmed in imported dogs whilst under quarantine restrictions.

Jews and Humane Slaughter.

The Weinberg Pen Trials Committee, under the chairmanship of Professor F. T. G. Hobday, principal of the Royal Veterinary College, have approved of the Weinberg machine for slaughter of animals for Jewish consumption. The committee consisted of chairman of markets committees, representatives of societies interested in the care of animals, and of the Board of Deputies of British Jews. The committee decided that the method fulfilled the objects for which it was designed and was a great improvement in humanity on existing methods, and recommended its adoption. The recommendation will come before the Jewish Shechita Board for their consideration.

Personal.

Will.—Weston, Mr. Walter Pilley, of Glenmore House, Minehead, veterinary surgeon (net personality £18,626) £18,764.

From November 1928 to September 1929, there were eleven outbreaks of botulism in the United States. In these eleven outbreaks 35 people were affected of whom 21 died. The prevalence of the *B. botulinus* and the difficulty of destroying the spores explains the frequency of botulism. —*Science.*

The Veterinary Record.
25th January, 1930.

The Pen-shy Practitioner.

Wherever two or more practitioners of the art and science of Veterinary Medicine are gathered together, there the listener will be regaled with a recital of interesting cases, each seemingly more striking than the last, and terminating only with lack of further time for the telling. We have observed this phenomenon, in every part of the country, on so many occasions that we have often attempted to secure some crumbs from this feast of clinical fare for the benefit of readers of the *Record* by hinting, we hope tactfully, that our friends would be rendering good service to their fellows by giving their cases both permanence and publicity. The one certain effect of this step, however, is to hasten the dispersal of the group, and we return to the editorial office deep in contemplation of the contrast between the ready tongue and the hesitant pen of our confrères.

Possession of the former robs the latter of justification, though not of explanation. If a man can discourse clearly upon a point of technique which he deems worthy of the consideration of his fellows, or in seeking their guidance in one of the many problems which present themselves to everyone in practice, surely he should be glad to take advantage of the wider forum offered by the Clinical and Case Reports section of the *Veterinary Record*. Here, however, is where the explanation of his abstention seems to lie. He would be glad to do so, but for the trouble of putting pen to paper, and we, accepting his statement that he is the busiest of men, request him to allow us to help him in this matter: to share the courage of our conviction that we can make good use of his most hastily-written notes.

Arrange as we may, and have done, for the effective functioning of services supplying other sections of this journal, the fact remains that, for producing to our satisfaction that which we regard as the most potentially-interesting and valuable of the whole paper, we are wholly dependent upon the practitioner in the field, and we appeal to him to enable us to supply his own demand for a periodical bearing closely upon his daily work.

No matter how great the pressure upon it, space is always available for "Clinicals."

As a final word, we would stress the value, in this connection, of the N.V.M.A. Clinical Prize Scheme for Students, as a means of inculcating in those most amenable to the process, the habit of case recording.

Clinical and Case Reports.

Spinal Concussion in Horses.*

By J. F. Craig, M.A., M.R.C.V.S., Principal, Veterinary College of Ireland.

I am using this heading to cover a certain class of cases among horses which are met with in practice. As a matter of fact very little information is available as regards the lesions, because few *post-mortem* findings have been recorded, or the records given are not very informative. I have seen such cases, particularly in the thoroughbred, but they may be noted in other breeds of horses. Not infrequently young horses become affected. The history which one may ascertain is to the effect that a horse is left in apparent health at night, either at grass or in the box, and the symptoms are noted when the animal is next seen. The symptoms seen are those of inability. As a rule the horse is able to lie down and to get up without difficulty and often stands in its natural position. Sometimes its back may be slightly arched and it may show spastic contractions of the hind limbs. When it moves it may straddle the hind limbs and drag the toes, or occasionally knock one hind fetlock against the other. It staggers in its gait and may knock its hind quarters against the sides of the door in leaving its box. If turned round sharply it may fall. The temperature is not much raised, if at all. The animal feeds well. Its bowels are normal and the urine is not affected. No swelling or abnormal hardness of the muscles or pain may be noted over the loins or back or on rectal examination under the psoas muscles or root of the pelvis. The tail is moved in its normal fashion and control over it is perfect. Occasionally the animal sweats on standing.

Many cases recover completely after a variable time, which may cover a period of weeks, months, or it may be up to two years. Some of the animals become worse and may ultimately be unable to rise, while others may improve to some extent but often cannot bear a weight on their backs, or jump or turn properly. They are often described as being affected with Jinked Back.

One frequently is asked what is the condition, and how is it set up. I have formed the opinion or theory that these are cases of spinal concussion, and that they are brought about during struggling or jumping from abnormally strong muscular contraction of the muscles of the loins, that hæmorrhage has occurred into the cord and that if the extravasated blood is not absorbed, degenerative changes from pressure occur in connection with some of the nerve tissue in the lumber protion of the cord. That that actually does occur cannot be demonstrated without *post-mortem* examination.

The usual treatment adopted consists in keeping the animal quiet, giving it a laxative and soft diet, and a course of potassium iodide and strychnine, or liquor arsenicalis, or Donovan's solution.

* Presented to the North Wales Division, N.V.M.A., at Chester, on November 28th, 1929.

Now as to the evidence I have regarding the true nature of the affection. I will quote two cases which I have been able to examine *post-mortem*.

1. A three-year old thoroughbred colt had been in training but became unable to bear the weight of the rider some six months prior to the time it came under my observation. In moving it dragged the toes of the hind limbs, knocked against the corners of the door in leaving the box, straddled the hind limbs or knocked them together. The toes of the hind hoofs had been decidedly worn down. The near hind limb appeared to be more seriously affected. In backing the animal dragged the legs. It had thorough control of the tail and sensation of the skin was unimpaired. As no improvement followed treatment the colt was destroyed.

At the *post-mortem* examination there were no changes noted in the aorta or iliac arteries, the muscles and ligaments in connection with the lumbar and dorsal region of the spinal column were perfectly normal, as were the vertebræ and intervertebral discs. There was no new fibrous formation. The dorsal and lumbar portions of the cord were removed and sections prepared at different levels. In the second lumbar segment the remains of a small blood clot were found in the dorsal horn of the grey matter on the left side. The material composing it was difficult to make out, but some of the extravasated red cells were still intact. A few degenerating nerve fibres in the lumbar portion of the cord distributed throughout the various columns were detected by Marchi's method.

2. A yearling thoroughbred filly became affected suddenly without history of an injury. The animal was at grass and was simply found with the symptoms, although previously it had been quite normal. It found difficulty in rising. When on its feet, it constantly changed the weight from one hind foot to another. The joints of the hind limbs were slightly flexed and the back was arched. It moved with a staggering gait and poked its nose forward. Sweating was marked over the hind quarters in a short time. If it was turned quickly there was a danger of falling. No pain or tenderness or swelling could be made out on manipulation over the back, loins or croup or on rectal examination. When down it was at rest and ceased to sweat. It fed well and its bowels and urine were normal. The temperature was about 102·8° F. This filly gradually became worse and was finally, after some three weeks, unable to rise. It was then destroyed and the *post-mortem* examination carried out within three hours after death.

The only lesions found were confined to the lumbar portion of the spinal cord and its coverings. A considerable quantity of serous fluid, estimated at about 1½ ozs., escaped from the subdural space in the sublumbar region when the spinal canal was opened. At the side of the lumbar enlargement of the cord the dura mater over a length of about 4 ins. on the right side particularly was thickened. There it was as much as ⅜ in. in thickness and very firm and red. It was attached in part to the side of the canal. The dura mater also appeared to be torn in places. Sections of this thickened part of the dura mater on miscroscopic examination showed the swelling to consist of new fibrous tissue, presumably inflammatory in origin. There were parts where the tissue was largely cellular. Through the new tissue extravasated blood was distributed.

Sections were also prepared and examined at various levels of the spinal cord, but it was only at the lumbar enlargement that any change was noted. There, rupture of some of the larger thin-walled vessels had taken place near the outer and ventral portions of the grey matter. The extravasated blood had accumulated in the tissues or spaces immediately surrounding the ruptured vessels, some of which had apparently undergone contraction. The red blood corpuscles in these situations did not stain well with eosin, as if the hæmoglobin had been largely washed out of them. The other vessels in the section were congested.

These then, were the lesions found in the two cases. It must be admitted that upon these two observations no general conclusions may be drawn, but at least they may be put forward as one cause of the trouble.

Abstract.

[**Kælvningsfeber med Krampe og dens Behandling (Milk-fever with spasms and its treatment).** B. Voss (Rynkeby, Denmark). *Medlemsblad for Den Danske Dyrlægeforening*, vol. 12, p. 427-438, 1929).]

In *Maanedsskrift for Dyrlæger*, vol. 39, 1927, the author has recommended the intravenous injection of chloral hydrate in milk-fever with spasms and reported seven cases which were all cured. From his own experience and from reports by colleagues, the author now knows the results from this treatment in 48 cases of milk-fever with spasms and in five cases of acute meningitis (without milk-fever). 49 out of these 53 cases were cured, that is, ca. 92 per cent. Previously the recovery percentage was 40-45. The curative effect in this treatment is probably due to the antispasmotic and blood pressure-lowering action of chloral hydrate.

The spasms usually set in 6-24 hours after the onset of milk-fever, in the muscles of the head and neck, sometimes in all the muscles of the body.

Treatment.—First heart stimulants; for instance: camphor ether (1+4) 40-60 c.c., or camphorated oil (1+4) 50 c.c., subcutaneously. Then injection into the jugular vein (centrally, if possible) of a fresh solution of chloral hydrate (60 gm. chloral hydrate and 5 gm. sodium chloride to 1 litre of boiled water). The injection is kept up till the animal is in deep narcosis (loud snoring), which ought to last at least three hours. For a cow of medium size 50 grams of chloral is a suitable dose, as a rule. When the injection is completed, an ice-bag is placed on the head of the cow and there is given a light air infusion into the udder.

The treatment is tolerated well, and practically all the treated animals are soon giving a high milk yield.

Army Veterinary Service.

London Gazette—War Office—Regular Army.

Jan. 21. Maj. A. S. Lawrie, having attained the age fixed for compulsory retirement, is placed on ret. pay (Jan. 19).

From The Veterinarian,

December, 1829.

Extracts from Journals, Foreign and Domestic.

Injection of Putrid Matter into the Veins.

By H. Hamont, v.s.

Dr. Leuret has shown, by direct experiment, that the blood of horses affected with carbuncle (charbon-anthrax) is capable of conveying the disease to other horses; and he has solicited attention to the analogy existing between the symptoms and lesions produced by typhoid diseases in animals, and those consequent on the presence of putrid matters in the blood; an observation of which further experience has only gone to confirm the truth.

Before we speak of the means best adapted to counteract these effects (which is the object we have in view in the present essay), it will be as well, perhaps, to give some account of the effects produced by injection of such matters.

On the 5th December, 1829, about noon, was injected into the right jugular vein of a lame mule, in full health and very spirity, three drachms of sero-purulent matter, extremely foetid, taken from an ulcer of another horse; the matter being previously dissolved in a little warm water. Pulse, at the time, 45.

Immediately after the injection, transitory shiverings: two hours afterwards he ate heartily, dunged naturally, and appeared quite well. Next day, although his appetite and spirits continued unaffected, yet his pulse had risen a little, and was irregular; his eyes became full; the membranes heightened in tint; the mouth moist.—Dec. 7th, slight depression; head hanging down; eyes gummy, and the conjunctiva infiltrated; respiration a little accelerated; pulse strengthened but slow—being only 33; appetite and evacuations unaltered.—8th, less irritable than he was; still hanging his head, and now staggers in his walk; pulse 51, and intermittent; excrement unchanged in appearance; towards evening extreme irritability.—11th, lying down; belly, tense; respiration embarrassed. All attempts to lift him up proved vain; he sank down again. Anus is swollen. Died at 1 o'clock in the afternoon.

Examined, an hour afterwards.—Belly distended; subcutaneous capillaries dark and turgid; large ecchymoses inside the thigh; the whole muscular system pale, and so soft that the fibres are lacerable with the greatest ease: red spots and patches upon various parts of the intestinal tube; villous membrane of the stomach reddened, that of the intestines pale; seven or eight pints of whey-like material within the thorax. Pleuræ reddened, and patched with adhesions on the right side to the pericardium. Heart extremely soft; its texture broken down easily. Lungs hepatized in one part; in others, presenting tuberculous masses of pultaceous matter. Bronchial membrane uniformly red.

These are appearances, but little varied, which such cases ordinarily present; only that, in this instance, they were complicated with a local affection of the respiratory organs, a particularity which may sometimes supervene, as Messieurs Dupuy and Trousseau have before observed in their interesting Memoir on the same subject.

(To be continued.)

National Veterinary Medical Association of Great Britain and Ireland.

Quarterly Meeting of Council.

There was an excellent attendance at the first quarterly meeting of Council, N.V.M.A., for the year 1930, which was held at 10, Red Lion Square, London, on Tuesday, January 7th.

The President (Mr. G. P. Male) occupied the chair and there were also present Mr. H. Bell, Lt.-Col. J. W. Brittlebank, Professor J. B. Buxton, Mr. J. C. Coleman, Principal J. F. Craig, Mr. H. J. Dawes (Hon. Secretary), Major G. W. Dunkin, Professor S. H. Gaiger, Mr. R. E. Glover, Major F. L. Gooch, Capt. O. V. Gunning, Principal F. T. G. Hobday, Professor James Macqueen, Mr. J. W. McIntosh, Major-General Sir John Moore, Capt. S. J. Motton, Major R. H. H. Over, Major D. S. Rabagliati, Mr. W. D. Rees, Capt. J. R. Rider, Mr. H. L. Roberts, Lt.-Col. P. J. Simpson, Capt. R. Simpson, Mr. H. P. Standley, Capt. W. K. Townson, Mr. E. Alfred West (Hon. Treasurer), Mr. J. Willett, Dr. A. W. Whitehouse, Capt. W. G. Wragg, Professor G. H. Wooldridge and Lt-Col. T. D. Young, together with Mr. F. Knight (Secretary) and Mr. C. O. Langley (Solicitor).

The Late Mr. John McKinna.

The President, at the outset, said that before commencing the business of the meeting he was sure the members would wish him to refer to the death of one of their most esteemed colleagues, Mr. John McKinna. Mr. McKinna had been a member of the Council of that Association for a number of years; he had also been President of the Royal College of Veterinary Surgeons and he had always taken a very great and deep interest in all matters relating to the Veterinary Profession, and not only the Veterinary Profession, but in other spheres of life and in his own town of Huddersfield, he was much respected.

Mr. McKinna was a man of sterling character and integrity, and of a very lovable disposition. He was sure they would miss his sound, good advice on that Council, and they should mourn him as a dear friend.

He would like to move that a vote of condolence be passed to his wife and children. The Council complied, standing in silence.

Minutes.—The minutes of the October, 1929, meeting of Council, which had been published in the *Veterinary Record*, were taken as read and were confirmed and signed.

The Secretary said that there were one or two matters arising out of the minutes. Firstly, letters had been received from Mr. Arthur Gofton, Major T. G. Heatley, and Mr. Hugh P. Hogben, requesting the withdrawal of their names from the Committees of the Association to which they had been elected to serve.

The Council filled the consequent vacancies as follows: Veterinary Officers and Public Health Committee, Lt.-Col. J. W. Brittlebank and Major R. H. H. Over; Appointments Committee, Mr. H. L. Roberts; Organising Committee, Lt.-Col. T. Dunlop Young, and Parliamentary Committee, Capt. R. Simpson.

Also arising out of the minutes, the Secretary reported

the receipt of letters from the Honorary Members of the Association, thanking the Council for its decision to supply each Honorary Member with a free copy of the *Veterinary Record* weekly.

The Secretary said that, arising out of minutes of earlier meetings, he had to report that the Committee appointed to approach the Council of the Royal Sanitary Institute with the object of securing for the profession representation on the Council of that body had sent the following letter.

27th November, 1929.

Dear Sir,

Because of the close relation of the work of the veterinary profession with the Royal Sanitary Institute in the field of Meat and Dairy Inspection, the Council of the National Veterinary Medical Association of Great Britain and Ireland ventures to think that a more intimate association of the veterinary profession with the Governing Body of the Institute would be distinctly advantageous.

My Council notes with pleasure and gratification that the addition of Mr. J. R. Hayhurst, M.R.C.V.S., D.V.S.M., to the Council of the Royal Sanitary Institute has recently been made, but it would respectfully suggest that your Council would be strengthened in that portion of its work relating to the training and examination of candidates to undertake duties in Meat and Dairy Inspection by the addition of at least one other Veterinary Surgeon. My Council feels confident that fuller representation would lead the veterinary profession to take an even greater interest in the work of your Institute.

With that object in view, my Council ventures to suggest the names of the following gentlemen as suitable and helpful members of your Council if it be found possible to elect them :—

Major Brennan De Vine, M.C., F.R.C.V.S., D.V.S.M. (Vict.).
Major J. A. Dixon, T.D., M.R.C.V.S.
Major F. L. Gooch, F.R.C.V.S.
Prof. Geo. H. Wooldridge, F.R.C.V.S., M.R.I.A.

I trust this will meet with your favourable consideration.

Yours faithfully,
F. Knight, *General Secretary.*

The Secretary,
The Royal Sanitary Institute,
90, Buckingham Palace Road,
S.W.1.

To this letter, proceeded the Secretary, the following reply had been received :—

Royal Sanitary Institute,
90, Buckingham Palace Road,
London, S.W.1.
29th November, 1929.

Dear Sir,

I am in receipt of your letter of November 27th, suggesting that the Council of the Institute should be strengthened by the addition of at least one other Veterinary Surgeon. I shall be pleased to bring your letter and the suggestions contained therein before the Council of the Institute in due course.

I may say that various stages have to be gone through before a person is eligible for election as a Member of the Council. First, he must be a Member of the Institute before he can be elected to the Fellowship, and as the number of elections to the Fellowship is limited, the period of Membership may vary considerably, but the minimum period is one year. In order to be a Fellow, a person must have done noteworthy sanitary work. Only Fellows are eligible for election as Members of the Council, and the total Fellowship is at present nearly 400. The number of Members of Council is limited to 31.

I think you may be interested to have these particulars so as to be more fully informed as to the preliminaries for election as a Member of the Council.

Yours faithfully,
J. W. Dudley Robinson, *Secretary.*

General Secretary,
National Veterinary Medical Association.

The President expressed the view that there the matter must be left for the moment. He hoped the Council of the Institute would adopt the suggestion made by the Association.

Correspondence.

1. From the following gentlemen, apologising for their inability to attend the meeting :—

Dr. O. Charnock Bradley, Mr. W. H. Brooke, Mr. J. Clarkson, Mr. J. H. Carter, Major Brennan De Vine, Mr. P. J. Howard (Ennis), Mr. Richard Hughes, Major H. Kirk, Capt. J. McAllan, Major J. G. McGregor, Major E. S. Martin, Mr. W. Nairn, Mr. R. Barons Nelder, Mr. C. E. Perry, Capt. A. W. Noel-Pillers and Capt. H. C. Rockett.

2. From Mr. George King, a Director of the Animal Diseases Research Association, stating that he was strongly of opinion that the Director of Research to be appointed should be a member of the Veterinary Profession.

3. From the Hon. Secretary of the Dumfries and Galloway Division, N.V.M.A., relative to the same subject, stating that :—

" Though no special action was asked from the Division, the members decided that the Secretary should write the Local Directors and that members would approach them privately if possible."

4. From the Hon. Secretary of the Eleventh International Veterinary Congress, to be held in London from August 4th-9th, 1930, inviting the Council to appoint representatives.

The Council appointed the President and Mr. C. O. Langley (Solicitor) as its representatives to this Congress.

5. From the Secretary of the Royal Sanitary Institute, inviting the Council to appoint representatives to the 41st Congress and Exhibition of the Institute, to be held at Margate from June 21st-28th, 1930.

The President, or his nominee, was appointed.

6. From the Hon. Secretaries of the Royal Institute of Public Health, inviting the appointment of delegates from the Council to the Congress of this Institute to be held at Portsmouth from June 7th-9th, 1930. It was again decided to request the President, or his nominee, to represent the Association.

7. From the Clerk to the Malvern U.D.C. conveying the invitation of the Council to the Association to hold its Annual Congress in 1931 in Malvern. The Secretary was instructed to thank the Malvern Council for its invitation and to say that it would receive very sympathetic consideration by the next Annual Meeting of the Association, to be held in August, when the place of meeting for 1931 would be chosen.

Proposed Alteration in Constitution of Council, N.V.M.A.

The next business was to receive the replies of the Divisions regarding the proposed addition to Article 59 of the Association's Articles of Association. The Secretary reported the replies received to the proposal, which provides for the addition to the Council of 25 representatives previously nominated by members of the Association and elected by them by ballot prior to the Annual General Meeting. It was decided to refer these replies to the Organising Committee for consideration and report to Council.

Resignations From, and Elections To, Membership of the Association.

The Secretary read the following list of names of gentlemen who desired to resign membership—most of them, it was stated, because they had retired from practice :—

Mr. G. H. Barber (Brewood), Lt.-Col. E. B. Bartlett (Exeter), Mr. H. W. Billinghurst (Bournemouth), Lt.-Col. G. Conder (India), Mr. C. H. Delacherois (Sandford), Mr. J. R. Dykes (Wellingborough), Mr. Adam Fulton (Gold Coast), Mr. A. H. Gentle (Otley), Mr. B. Gorton (Bournemouth), Mr. Walter G. Green (Marlborough), Mr. J. E. Holroyd (Manchester), Mr. Richard Miller (Poulton-le-Fylde), Mr. D. W. Mills (S. America), Mr. G. Moir (Aberdeen), Mr. S. H. Nye (Loughton), Mr. J. Rae (Pollokshields), Mr. T. Rennie (Burgess Hill), Major A. W. Reid (Deal), Mr. T. Slipper (Cheltenham), Mr. W. J. Wagstaffe (Macclesfield), Mr. Alfred C. Wild (Gunnislake), Mr. D. E. Wilkinson (Chigwell) and Mr. A. C. Wilson (Berkhamsted).

On the proposition of Mr. West, seconded by Colonel Simpson, these resignations were accepted with regret.

The following list of the names of gentlemen who, having duly filled in nomination forms and paid their subscriptions, sought election as members of the Association, was read, the list numbering 23, and balancing the number of resignations :—Messrs. Philip D. Baylis (London), W. P. B. Beal (Bath), Thomas Davies (Langybi, S.O.), A. C. Dixon (Berkhamsted), S. J. Edwards (London), John Herratt (Barton-on-Sea), George Hobson (Waterford), W. O. Jones (Llanrwst), Major A. J. Kelly (R.A.V.C.), E. V. Kelly (Kells), W. R. Kerr (Newport, Salop), R. M. Lawson (Ruthin), A. G. McCaughan (Downpatrick), P. A. McGeady (Milford, Co. Donegal), J. McIlwaine (Swansea), E. J. Mulligan (Nairobi), John Morton (Port Stanley), H. V. O'Brien (Dublin), J. Coningsby Smith (Stokesley), A. P. Steele (Ipswich), J. Thompson (Belfast), Major R. C. G. Thwaytes (R.A.V.C.), and D. Wyllie (Wembley Park).

Mr. West remarked that, as he had proposed acceptance of the resignations, he would like to propose the election of the new members.

Their election was unanimous and *en masse*, and the President took the opportunity to make an appeal to all concerned to use their best efforts to increase the membership.

Reports of Committees.

Editorial Committee.

Major Dunkin (Chairman) read the report of this Committee, as follows, and moved its reception and adoption :—

In view of the decision to transfer the printing of the *Veterinary Record* from Messrs. Hudson & Son, Birmingham, to Messrs. H. R. Grubb, Ltd., Croydon, as from January 1st, 1930, the Editorial Committee has completed the requisite arrangements during the past quarter.

During this period, also, further steps have been taken to initiate a satisfactory translation-abstract service on a paid basis. A panel of Abstractors has been appointed, and the list of exchanges with the *Record* has been carefully revised and where necessary extended to permit of the most suitable allocation of journals.

In regard to advertisements, the majority of contracts terminate at the end of the year, and although at this time it is the inevitable experience that certain losses are incurred, it is satisfactory to record that the percentage of renewals has been higher than in previous years and there is every reason to hope that in the near future not only will the ground thus lost be regained, but that steady advance will be made as the year proceeds. The position as regards the display advertisement section may therefore be regarded as satisfactory.

Certain announcements received for the small advertisements sections have, however, presented considerable difficulties. In consequence of the existence of certain officially-recognised scales of salaries for appointments with Research Institutes and for whole-time Veterinary Officers under County Councils, the Committee has found it necessary to refuse the insertion of several advertisements which did not offer salaries conforming to the above-mentioned scales, and this action has been supplemented by appeals in the literary columns urging members to support the steps taken by withholding applications for such posts. By this means one County Council has been induced to raise the salary offered to that stipulated by the Association. As may be imagined, this strong action on the part of the Association has produced considerable correspondence from members who, while wishing to apply for the posts in question, have yet desired to remain loyal to the Association, and the Committee desires to lay some items of this correspondence before the Council in order that the support of the Council may be obtained for the action taken.

The Solicitor's opinion has been sought in relation to the action of the Association in placing a ban upon appointments which do not comply with officially-recognised scales.

The following Resolution has been unanimously passed by the Committee :—

> " That the Council be asked to pass a Resolution that the Editorial Committee, collectively and individually, be indemnified against all claims, costs and demands of any nature whatever arising out of or in connection with the duties they might perform, as such a Committee."

Professor Wooldridge seconded the motion for the adoption of the report.

The President drew the attention of Council to the resolution which it was desired by the Editorial Committee that the Council should pass, and added that he might say that there was an endeavour being made to get an insurance policy to cover the risks stated therein. Perhaps they would like to hear what the Solicitor had said on the points relative thereto, which were put to him by the Committee.

The Solicitor's opinion (given in the course of correspondence) was read, and the President proceeded : " The correspondence to which the Committee refers in its report, I think had better be read now. It has reference, of course, to appointments and from it you will gather the exact position." The Council resolved itself into Committee to consider the correspondence.

Upon the resumption of open meeting, the report was adopted and the following further resolution was unanimously passed : " That this Council approves the action taken by the Editorial Committee in regard to the Animal Diseases Research Association and the Somerset County Council appointments."

At this stage Mr. McIntosh rose to say : " With regard to the Somerset appointment, I think this Council ought to express their appreciation of the loyalty of those members who refrained from making application, and that of others who withdrew their application after the ban became known. (Hear, hear). We realise the difficulties in which many of these members were placed, and we are deeply

grateful to them for their loyalty to their Association and to their profession." (Loud applause.)

The President: "I put that to the meeting: our expression of the Council's appreciation of the action of those loyal members." The resolution was carried with enthusiasm.

Joint Sub-Committee re "Veterinary Record" printing contract.

The following report of this Committee was read by Major Dunkin (Chairman):—

In accordance with the power granted to the Joint Sub-committee at the October meeting of Council, a form of agreement drawn up by the Association's Solicitor, as between the Association and Messrs. H. R. Grubb, Ltd., of Croydon, concerning the printing of the *Veterinary Record*, beginning January 1st, 1930, and extending for two years, was approved and adopted for presention to the Printer's Solicitors. The Joint Sub-committee are glad to report that an agreed contract has consequently been arrived at, and they accordingly recommend that the Seal of the Association be now affixed to this document.

The motion and reception of this report was moved by Major Dunkin and seconded by Colonel Simpson. Major Dunkin then moved its adoption. This motion was seconded by Major Rabagliati and carried unanimously.

The President: The seal has been affixed to the contract, so that all is now in order.

Appointments Committee.

Professor Macqueen (Chairman) read, and moved the reception and adoption of the following report of this Committee:—

A meeting of the Appointments Committee was held at 10, Gray's Inn Square, W.C.1, on Tuesday, January 7th, 1930, when Professor James Macqueen was re-appointed Chairman.

The Minutes of the previous meeting, having been published in the *Veterinary Record*, were taken as read and signed as correct.

Letters were read expressing deep appreciation of the Association's action in connection with the commencing salary offered by a County Council for Assistant Veterinary Officers, which action had resulted in the salary being increased to the minimum recommended by the N.V.M.A. for such appointments.

Consideration was given to a letter from Dr. Bullock enquiring whether there would be any objection to the publication of the Association's scale of minimum commencing salaries for whole-time Veterinary Officers in a revised edition of his Handbook for Veterinary Surgeons.

It was agreed to inform Dr. Bullock that the Association had no objection to such publication, and to suggest that this should be accompanied by a note saying that the scale was liable to revision and that therefore intending applicants are recommended to apply to the Secretary, N.V.M.A., for further information.

The Council considered the Report in Committee, and upon the resumption of open meeting, the motion for reception and adoption was seconded by Mr. McIntosh, and carried unanimously.

Finance and General Purposes Committee.

The following report of this Committee was read by Colonel Simpson (Chairman), who moved its reception and adoption:—

Two meetings of the Finance and General Purposes Committee have been held during the past quarter.

At each meeting a statement of receipts and expenditure has been presented, together with a list of liabilities, which have been passed for payment.

Much time has been devoted to outstanding subscriptions, and the Committee has been reluctantly compelled to ask the Association's Solicitor to take steps to secure from 11 members the subscriptions owing by them for the years 1928 and 1929. In addition, the Secretary has been instructed as to the steps to be taken in the case of the 26 members who have still to pay the subscription for 1929.

Enquiries have been made regarding vacant offices in Gray's Inn which were thought to be more suitable for the Association than its present accommodation. It has been ascertained, however, that the premises in view are being retained by Gray's Inn for their own use. As a result of these enquiries it appears doubtful whether the Association's requirements can be met in the Inn, and the Committee will consider the matter further at an early date.

The Hon. Treasurer presented a report on the finances of the Association for the months of October and November, 1929, which showed a balance in hand, on November 30th, of £219 3s. 10d., and liabilities amounting to £341 18s. These reports were adopted without discussion.

Report of Joint Meetings of the Appointments Committee and the Veterinary Officers' and Public Health Committee.

Professor Macqueen read the following report, and moved its reception and adoption:—

Two joint meetings of the Appointments Committee and the Veterinary Officers' and Public Health Committee have been held since the October Council Meeting.

As authorised by the Council, the Joint Committee has revised the scale of salaries recommmended by the Association for whole-time Veterinary Officers, as approved by the Council in April, 1928, so as to specify a *minimum* commencing salary for each grade of appointment. The new scale is as follows and the Joint Committee recommends its adoption by the Council:—

Chief Veterinary Officer.

(*a*) For the Chief Officer with one or more Assistant Veterinary Officers, a commencing salary of from £700-£1,200 per annum according to his duties and responsibilities.

(*b*) For an Officer working alone in a Borough or County, where only one Veterinary Officer is required, a commencing salary of from £600-£1,000 per annum according to his duties and responsibilities.

Senior Assistant Veterinary Officers.

For Senior Assistant Veterinary Officers a commencing salary of from £500-£700 per annum.

Junior Assistant Veterinary Officers.

For Junior Assistant Veterinary Officers, a commencing salary of from £400-£500 per annum.

No scale of periodic increments for Veterinary Officers has been formulated, on the understanding that employing authorities will give adequate increases for capability and length of service.

The Association strongly recommends the provision where possible of a contributory superannuation scheme for Veterinary Officers—Senior and Junior.

Copies of the revised scale have been sent to the County Councils' Association, the Association of Municipal Corporations, and the National Association of Local Government Officers, and thus the scale has now been made available for the guidance of any Local authorities who may contemplate the appointment of whole-time Veterinary Officers.

The Joint Committee recommends the adoption, temporarily, and as a minimum, of the following scale of salaries for research workers recommended by the Agri-

cultural Research Council and approved by the Lords Commissioners of H.M. Treasury :—

Grade 3	...	...	£320—20—£380.
Grade 2	...	...	£425—20—£625.
Grade 1	...	...	£630—25—£830.
Directors	...	...	£1,000—£1,200.

The above salaries are subject to an addition of 10 per cent. towards superannuation.

Major Rabagliati having seconded the motion,

Professor Gaiger asked: "Why not add Advisory Officers' salaries at the same time? I think it would be a good thing to put down the recognised scale for Veterinary Advisory Officers." He moved "That the Appointments Committee enquire into the salaries of Veterinary Advisory Officers and formulate a scale."

Major Dunkin seconded, and this proposition was agreed to.

Professor Wooldridge said that there appeared to him to be a little discrepancy in the report as read, in view of the fact that the revised scale stated that a single Veterinary Officer, working alone in a borough or county should have a commencing salary of £600-£1,000, according to his duties and responsibilities. Would it not have been better if the commencing salary had been £700-£1,000, according, etc.?

The President replied that the reason why the Committee decided to agree to that scale was that in a borough, and especially in Scotland, it was thought that £600 was probably sufficient as a commencing salary, and it was left between £600 and £1,000, so that the Committee could decide, according to the duties and responsibilities, what the salary in a particular county or borough should be. They could not compare a small borough with a county, and that was the reason why it was left in the way it was.

Mr. Roberts said that, in the light of the President's remarks, could not the scale be amended to read £600 for a borough and £700 for a county for a man working alone.

The President replied that that point was discussed, but there were some very small counties, and it was thought that the Committee would have to decide what was an adequate salary for each particular borough or county.

Professor Gaiger expressed the view that area was not a good basis on which to determine salary. Would it not be better, he asked, to go on animal population, or something like that?

Major Rabagliati replied that the Committee had discussed that suggestion, but had come to the conclusion that it would not be feasible.

The President said that the point made by Professor Wooldridge appealed to him; it was going to make it very awkward for any committee dealing with the matter to ban appointments. They thought, however, that each appointment should be judged on its merits.

Professor Wooldridge thought that the way to get over the difficulty would be to adopt the suggestion made by Mr. Roberts.

Professor Macqueen observed that there were several reasons why they should not alter the scale as published. One was that they had issued those schedules to the various associations, and another was, of course, that there were certain qualifying terms, such as "according to duties and responsibilities," and he thought that, in the event of any question arising regarding an adequate salary for an appointment, it would be the duty of the Appointments Committee to ascertain, before taking action, what the duties and responsibilities of the appointee would be. Therefore, he thought they had better leave the schedule as it stood. They considered all those questions and also the various aspects of the situation, and they came to the conclusion that a margin of £400 was sufficient. Because of the conditions obtaining in Scotland and also in some parts of England, it was almost impossible to fix a minimum that would be applicable to all. He could assure them that the Committee gave full consideration to that aspect of the question and, if they would be guided by him, they would allow the schedule to remain as it was.

The motion for the reception and adoption of the report was carried unanimously.

Veterinary Officers' and Public Health Committee.

The Secretary read the following report of this Committee :—

A meeting of the Veterinary Officers' and Public Health Committee was held at 10, Gray's Inn Square, W.C.1, on Tuesday, January 7th, 1930.

The President was re-appointed Chairman of this Committee for the current year.

The Minutes of the previous meeting, having been published in the *Veterinary Record*, were taken as read and signed as correct.

Arising from the Minutes, it was decided to ask a member to furnish the Committee with any further information in his possession relative to the statements made at an Agricultural Committee meeting regarding the unreliability of the tuberculin tests, efforts having been made, without success, to secure this from the Veterinary Surgeon concerned.

A letter was considered from the Secretary of the Dairy Shorthorn Association, enclosing a specimen form of certificate of tuberculin testing and seeking the opinion of the Association upon the provision made in the certificate for the insertion of the tattoo numbers of tested animals.

It was decided to reply that the Committee are in agreement that tuberculin test certificates should be as uniform as possible; also that if the tattoo marks are legible they should be inserted; if not, then insertion should be made of the name under which the animal is registered in the stud book. The Dairy Shorthorn Association were to be informed, however, that, owing to the different methods employed in applying the tuberculin test, and the fact that the Ministry of Health insist on the Double Intradermal Test for their purposes, the Committee find themselves unable to adopt the certificate in its present form.

At the request of the Council the Committee considered the following resolution passed at the Ayr Congress of the Association, together with letters from the Mid-West and South Wales Division and South-Eastern Division relative thereto :—

Milk Special Designation Order, 1923.

(*a*) That there be three grades of milk (1) milk from cows which have passed the tuberculin test; (2) milk from other cows; and (3) pasteurised milk.

(*b*) That the above resolution be forwarded to the Council of the Association in order that appropriate designations may be decided upon and further action taken.

After very careful consideration, the Committee unanimously resolved to recommend to the Council "That the three grades of milk shall be :—

1. Standardised milk from cows which have passed the tuberculin test.
2. Standardised milk.
3. Standardised milk (pasteurised).

Other resolutions relative to the Order were before the

Committee, but owing to lack of time their consideration was deferred."

The President moved, and Mr. Roberts seconded, the reception and adoption of the report.

Replying to Mr. Coleman, the President said that the figures 1, 2 and 3 were not attached to the grades. The Committee decided that the grades should stand on their merits, without the addition of any letters or numbers.

Mr. Coleman said that he thought that the concensus of opinion in the country was that the grades should either be lettered A, B and C, or numbered 1, 2, and 3. He felt strongly that it was necessary that the designations whatever they might be, should be more clearly defined than they were. With the President's permission he would like to read designations of which he thought after the Committee meeting, and which he would like the Council to consider, viz. : —

Grade 1.—Standardised Clean Milk from cows which have passed the tuberculin test.

Grade 2.—Standardised Clean Milk.

Grade 3.—Standardised Clean (Pasteurised) Milk.

He wanted the word "clean" to be inserted in all the grades, for there were many clean milk societies and milk recording bodies in the country, and if the word "clean" was not used he thought that they would be affected very considerably.

He urged, moreover, that the Council should adopt a nomenclature which defined the grades clearly as 1, 2 and 3, or A, B, and C.

The President said that he might just say, for the information of the Council, that the reason why the term "clean milk" was not used was that the Committee felt that, if attached to the second grade, the term would imply that the milk was free from tubercle bacilli, and as veterinary surgeons they wanted to make a clear distinction between milk from cows that had been tested and had passed the test and milk from cows that had not passed the test. Clean milk, so far as the veterinary profession was concerned, would imply that producing cows had passed the tuberculin test. That was why the word "standardised" was inserted into the second grade and the word "clean" omitted.

Mr. Coleman said that if the Council agreed to the inclusion of the figures, he did not press for the word "clean," as he was in full sympathy with the President's remarks.

Speaking at the request of the President, Colonel Brittlebank said that he had not time to consider the matter. He was sorry that he had not been on the Special Committee, which had been appointed to consider this matter (hear, hear), but the Council would remember that when he became President of the Royal College of Veterinary Surgeons, he asked to be relieved from all committee work, and, in consequence, it was probable that he had in some measure fallen out from some of the activities of the "National," but he hopes to be allowed again to participate. That was only an aside and, to return to the matter before them, it was very difficult, with the best will in the world, to offer any constructive criticism; destructive criticism was anathema to him. Nobody would like to see that question put on a firm and satisfactory basis more than himself, but he must say that the word "standardised" was going to lead to unbounded confusion.

He had had the opportunity and pleasure of having a little consultation with the President beforehand, feeling that if he could get some clear definition of what was in his mind as to the word "standardised" he might possibly have been more reconciled to the nomenclature. But he would say this: that it did seem to him by using the word "standardised," of a product which was really to be judged on its bacterial content was extraordinarily dangerous. If it applied to its chemical content, or its food value as based on its chemical content, then, if it were possible to get such a standard, he would agree with the Committee. But at the moment he would rather accept the suggestion that the matter be allowed to sink into their minds a little, to see if they could put it on a proper basis. They had to realise that it was not a veterinary question alone, it was a very large question which affected many people and bodies outside the Veterinary Profession, and one which might affect the Veterinary Profession very much to its discredit or, should he say, to its ridicule, if they were not very careful.

For a number of years now the people had got used to certain designations, and he had just ventured to express the opinion to Professor Buxton (before the latter left) that he was of opinion that it would be much better to leave the matter as it was than to adopt such a word as "standardised." He knew how difficult the matter was, and if it was their wish that those designations should go forward, of course he would be loyal to the decision of the Association, as he always had been, but he did invite them, in the light of long experience, to a more mature consideration of the nomenclature they had suggested.

Mr. Coleman proposed that that part of the report which had reference to the designations be referred back to the Committee, and that Colonel Brittlebank be co-opted on the Committee.

Colonel Brittlebank said that one of the reasons for his attitude was that recently he had had an opportunity of participating in the deliberations of the County Councils' Association. That question of milk designations had been before them and they had asked him to prepare a memorandum for their guidance in approaching the Ministry, and he had held off. It was the first time that any member of the profession had been allowed to get into the Councils of the County Councils' Association, and he had held off on purpose, for he had considerable hesitancy in going forward with those designations that they had preliminarily decided upon. He suggested that they should go outside the scope of their present committee and call a general meeting of as many people as possible who might be interested in that subject. He knew they had a discussion at Ayr, but one knew also that those discussions were tied by time. He did feel that any proposals they made should go forward after ample discussion, and with the approval of the whole profession. It was no part of his intention, of course, to cast any aspersions on the Committee which had dealt with the matter, but he felt that they should extend beyond the scope of the people who had had to deal with it hitherto.

The President asked to be allowed to say one word in answer to the helpful remarks of Colonel Brittlebank, which they all appreciated very much. (Hear, hear.) The Committee had had before it all the points of view of

the various bodies concerned; for example, the nomenclature which had been adopted by the County Councils' Association on the recommendation of the Cambridgeshire County Council and other county councils. Some of the members of the Committee had also been in touch with the Grade A (T.T.) Milk Producers' Association and other bodies, and his own view was that the more bodies they called in . . . .

Colonel Brittlebank: "I do not mean outside bodies, please; I mean professional men."

The President, proceeding, said that the more people they called in, the more complications they would get. (Colonel Brittlebank: "I quite agree.")

He did not think that the Committee were wedded to their suggestions, but their great idea was to get away from the terms of the present Order, which had been used in such an indiscriminate manner and which nobody understood. Therefore they got right away from those terms, but they hesitated whether they should use the word "graded" or the word "standardised" as the qualification. They felt that some reference must be made to the bacterial count. If they said simply "milk from cows which have passed the tuberculin test" for the first grade, then for the second grade they would be in a difficulty, because it would be simply "milk." If they used the word "clean" for that grade, it would imply that it was free from tubercle bacilli, and the only way out that occurred to him was to use the term "standardised," which implied that there was a certain standard which the Ministry required for that particular grade. If a better term was suggested, he thought the Committee would adopt it, but in adopting a term of that sort, he did not see any possibility of getting unanimity of opinion.

Major Rabagliati thought that it would be a good plan to adopt Colonel Brittlebank's suggestion and call a special meeting of a larger body. The question was one which looked quite simple at first sight, but which, in reality, was beset with endless difficulties, and therefore now that they had got Colonel Brittlebank on the Committee, perhaps it would be wiser to wait rather than to risk error.

Colonel Brittlebank said that he thought that, if such a meeting were called, they would get local authorities to send them veterinary officers.

Professor Wooldridge said that, like Colonel Brittlebank, he did not like the word "standardised," particularly in its application to an article which might vary considerably in its chemical content, and if a word resembling it was to be used, it might be such a term as had been employed in regard to bread; the term "standard milk" might be employed. In that event, the first grade would be called "standard milk (tubercle tested)"; the second, "standard clean milk," and the third, "standard pasteurised milk." He would have very strong objection to labelling the grades 1, 2, and 3, or A, B, and C, as suggested by Mr. Coleman, judging rather from the farmer's point of view, because if they encouraged the farmer to go to great expense and then asked him to label his milk a second or third-grade article, he simply would not do it.

Replying to the President, Professor Wooldridge said that the words "Tuberculin tested" in the first grade designation would imply that the cows producing it had passed the tuberculin test.

After some further discussion the Council unanimously resolved "That this Council invites a full discussion of the question of milk grading and refers back to the Veterinary Officers' and Public Health Committee for further consideration that part of their report relative thereto, and asks the Committee to arrange for the holding of a meeting in which all veterinary officers shall be invited to take part, letters of invitation to be sent to their local authorities."

The report of the Committee was then adopted, with the exception of the last section, regarding the grading of milk, referred back to the Committee.

Organising Committee.

In the absence of Captain Rider (Chairman), who had left the meeting, the report of this Committee was read as follows by Colonel Young, who moved its reception and adoption:—

A meeting of the Organising Committee was held at 10, Gray's Inn Square, W.C.1, on Tuesday, January 7th, 1930, when Captain J. R. Rider was re-appointed Chairman.

The Minutes of the previous meeting, having been printed in the *Veterinary Record*, were taken as read and signed as correct.

A report of material circulated to the lay press during the past quarter was read and approved.

A letter was read from Mr. P. J. Howard, M.R.C.V.S., suggesting that the Regulations governing the Clinical Prize Scheme for Students should stipulate a certain number of cases to be reported on by each competitor, and should also define the different domestic animals to which the notes should refer.

It was agreed to recommend that the Regulations be altered by omitting from paragraph 1 the words "not fewer than," and making the relative phrase read "for the best collection of notes on six clinical cases." In regard to Mr. Howard's second suggestion, it was felt that the choice of domestic animals as subjects to be reported on should be left to the discretion of the competitor.

The Committee received the report of the Assessors on the notes submitted by the three entrants for last year's competition, and it was resolved to recommend to the Council that the prizes be awarded as follows:—

First Prize (£15), to Mr. J. Adamson, Junr., Royal Veterinary College, London.

Second Prize (£7), to Mr. F. J. Kinghorn, Glasgow Veterinary College.

Third Prize (£3), to Mr. J. L. Buckingham, Royal Veterinary College, London.

A hearty vote of thanks was accorded to the Assessors (Messrs. H. J. Dawes, P. J. Howard and D. Imrie) for their valuable services to the Association during the past year.

Professor Wooldridge seconded the motion, which was carried unanimously.

Parliamentary Committee.

The following report of this Committee was read by the Chairman (Mr. J. C. Coleman), who moved its reception and adoption:—

A meeting of the Parliamentary Committee was held at 10 Gray's Inn Square, W.C.1, on Tuesday, January 7th, 1930.

Mr. J. C. Coleman was re-appointed Chairman of this Committee for the current year.

The Minutes of the previous meeting, having been published in the *Veterinary Record*, were taken as read and signed as correct.

A print of Sir Robert Gower's Bill to "Prohibit Vivisection of Dogs," was submitted, and the Committee reaffirmed its previous decision that the N.V.M.A. should co-operate with the R.C.V.S. in opposing the Bill.

It was agreed to remit Sir Robert Gower's Coal Mines (Protection of Animals) Bill to the Mining Sub-committee, who will shortly meet the promoter to discuss suggestions

for the amendment of the Bill which have already been placed before him.

It was decided to invite Lt.-Col. J. W. Brittlebank and Sir John Moore to join the Mining Sub-committee in the capacity of co-opted members.

Dr. Whitehouse, having seconded the motion,

The President observed that he might say that the Mining Sub-committee had taken a great deal of trouble in the matter of the Coal Mines Bill, and a deputation would be meeting Sir Robert Gower in about ten days' time to discuss the Bill with him. They hoped to get inserted in the Bill the amendments which the Sub-committee were urging. The report was received and adopted without discussion.

Resolutions from Divisions.

(*i*) *From the Mid-West and South Wales Division* :—

"That the Council of the Mid-West and South Wales Veterinary Association thanks the N.V.M.A. for the action taken in the matter of salary offered by the Somerset County Council, and would be glad if they could take any further action to ensure the successful candidate getting the minimum salary of £700 per annum."

The President stated, in connection with this resolution, that the Association had done everything possible to achieve the object set forth therein.

Professor Wooldridge expressed the view that, although the President's remark was probably accurate, it was a good thing that the Division had tabled the resolution, because those members of that Division who had to work under the person who had been appointed had made their position perfectly clear: they had made an effort to get his salary raised.

It was resolved "That the resolution lie on the table."

(*ii*) *From the Dumfries and Galloway Division* :—

"That one or more meetings of the Council of the N.V.M.A. should be held annually in the North of England or Scotland."

Consideration of this resolution was deferred.

In the absence of Colonel Simpson, Professor Wooldridge moved the following motion, standing in the name of the former :—

"That the Standing Committees of the Association have power to co-opt members for the ensuing year."

The Solicitor informed the Council that this motion would have to be submitted to a general meeting of members when, if approved, it would be necessary to hold a confirmatory meeting.

The next item on the agenda, *viz.*, "To consider means by which the membership of the N.V.M.A. can be increased," was, on the proposition of Col. Young, seconded by Capt. Gunning, remitted to the Organising Committee for consideration and report.

The proceedings concluded with the passing of a hearty vote of thanks to the President for his conduct of the meeting.

At a meeting of the Public Health Committee of the Londonderry Corporation, the executive sanitary officer reported the death of Mr. Howatt, the Corporation's veterinary inspector, and recommended a temporary appointment pending the filling of the post permanently. The names of Mr. T. M'Clintock and Mr. J. H. M'Crea were proposed, but it was pointed out that Mr. Bradley was carrying on Mr. Howatt's work, and it was agreed that he should continue to do so until a permanent appointment is made.

Divisional Report.

North Wales Division, N.V.M.A.*

Officers Elected at Chester Meeting.

A meeting of this Division was held on Thursday, November 28th, at the Queen Hotel, Chester. The President, Professor Share Jones, occupied the chair, and the following members were present: Messrs. Booth, Cane, Cartwright, Edwards, H. V. Hughes, T. Hughes, W. Hughes, H. Llewelyn Jones, L. Ll. Jones, Wynn Lloyd, Manley, Mills, Roberts, and Wynne. The visitors included Principal Craig, of Dublin, and Messrs. Crompton and Davies. Apologies for absence were read from Principal Hobday, Dr. Montgomerie and Dr. Savage.

The minutes of the previous meeting, having been printed in the *Veterinary Record*, were taken as read and confirmed.

Correspondence.—(1) From the Victoria Veterinary Benevolent Fund acknowledging the receipt of £1 7s. collected at the last meeting. The Society's collecting box was placed on the table and as a result the sum of 10s. was contributed at the meeting.

(2) An appeal for support from the National Horse Association. It was agreed to contribute a subscription of £1 1s. to the Association for the year 1930.

(3) From the Scottish Branch of the N.V.M.A. with reference to the scheme put forward by the West of Scotland Division for the eradication of Tuberculosis. After consideration of the memorandum, it was unanimously agreed "That this Division, whilst recognising the necessity for the eradication of Bovine Tuberculosis, considers that the scheme put forward by the West of Scotland Division is at present impracticable. The Division is of the opinion that the existing Orders relating to the disease should be revised, and in this connection recommends that the use of Tuberculin be under the control of members of the Veterinary Profession."

Election.—Mr. W. R. Davies, Rhyl, having been nominated at the previous meeting, was unanimously elected a Fellow of the Division.

The President, on behalf of the members, extended their hearty congratulations to Mr. Cane on his remarkable escape from injury which overtook him while driving his car.

Finance.—The Secretary reported that the Council had had no occasion to meet during the year. It was agreed that the accounts be accepted after being passed by the Auditors.

The Hon. Treasurer then read a statement regarding the finances of the Society. He was pleased to be able to inform the meeting that all but one member had paid his subscription and the Society now had a credit balance of £46 7s. 3d. Mr. Jones was congratulated upon his successful efforts to get arrears of subscription cleared up. It was agreed that the name of one member who was more than three years in arrear with his subscription be deleted from the membership list according to Rule 18. A discussion arose as to the retention of membership by persons who had been members of the Society but who

* Received on January 1st, 1930.

now resided abroad. It was agreed to defer consideration of the matter until the next meeting.

Election of Officers.

The following were elected for the ensuing year:—

President: Mr. J. H. Wynne.

Vice-Presidents: Professor Share Jones and Mr. Jones Roberts.

Hon. Secretary: Mr. H. V. Hughes.

Additional members of *Council*—Messrs. Edwards and Wynn Lloyd.

Auditors: Dr. Montgomerie and Mr. Wynn Lloyd.

The report of the committee appointed to deal with the question of the measures adopted for dealing with Sheep Scab was considered. After prolonged discussion it was agreed to refer the matter to the Council.

Mr. Wynn Lloyd then made an appeal on behalf of the *Macqueen Testimonial Fund*. It was agreed that the Society contribute £5 to the Fund.

The President and Secretary were elected delegates to the *International Veterinary Congress* in London, their membership fee to be paid by the Society.

Principal Craig's Address.

The President said it was next his pleasure to call upon Principal Craig. He was a great admirer of Principal Craig and he knew that if the latter accepted the invitation of the Society to give them an address he would be doing them an honour. He valued the Principal's sound judgment and he believed that no one stood on a higher level in the matter of keenness towards his profession. (Hear, hear.) It was a privilege to ask Principal Craig to address the meeting on Chronic Hæmaturia in Cattle and on Spinal Concussion in Horses.

Principal Craig, who was applauded on rising to speak, expressed his appreciation of the welcome extended to him, saying that it was a pleasure to him to be able to accept the invitation of their President to come to one of their meetings and present an address or paper for discussion. It was now some time since the invitation was first extended to him, but it had been frequently repeated and he was very glad that he found himself in a position to avail himself of it.

[The remainder of Principal Craig's address is printed elsewhere in this issue—his paper on "Chronic Hæmaturia of Cattle" near the commencement, and that on "Spinal Concussion in Horses," in our Clinical and Case Reports Section.—Ed.]

Discussion.

The President said he was sure they would all feel indebted to Principal Craig for his very comprehensive paper. It would be impossible to do justice to it, however, as it had not been circulated. What struck him particularly in the address was the detailed clinical picture which the speaker had presented to them, and it illustrated the value of clinical observation. There was a danger, he thought, of Veterinary Science being interpreted in too narrow a sense, and being regarded as synonymous with a single subject or department. He felt that there had been a tendency to this end and that the science had suffered in consequence. This was a matter to which a good deal of attention had been paid recently by one or two bodies with which he had been concerned, and it was essential that emphasis should be laid on the comprehensive nature of the science, and that it should be realised that it represented not one subject or department, but eight or nine big subjects. Such was the view taken by such divisions of learning as medicine and engineering. It was only in this light that they could get the public to understand the real meaning of their work.

In recent years he had been under the impression that too little importance had been attached to the deductions that could be drawn from observations made in the clinical field. There was a splendid illustration of the value of this in the paper read by Principal Craig. He, Dr. Share Jones, noted that whilst the course and clinical and *post-mortem* manifestations of chronic hæmaturia were dealt with by Principal Craig in detail, when he came to deal with the etiology he was most guarded. He had been able to exclude parasitic, including bacterial, causes, and had suggested the probability of some toxic agent picked up at pasture being responsible. He, Professor Share Jones, after hearing Principal Craig, was inclined to the view that the disease was due to some agent in the field of dietetics and that ultimately the cause would be found by making investigations in that direction. He hoped Principal Craig would pursue enquiries in this field.

With regard to spinal concussion, the President recalled how in the old days when dealing with affections of the back, after excluding hæmaturia, strain of the psoas muscles, stringhalt and shivering, any other conditions appeared to be grouped under the composite term of Jinked Back. The possibility, however, of concussion being a cause of affections of the back, as demonstrated by Principal Craig, suggested that they had never taken the pains to examine the conditions sufficiently carefully. He was much obliged to Principal Craig for his valuable contribution that day and he hoped members would enter freely into discussion.

Mr. Llewelyn Jones expressed his pleasure at seeing Principal Craig at the meeting. He remembered him at college and he was reminded that day how he used then to describe his cases—simply and thoroughly. Mr. Jones said that he had had several cases of chronic hæmaturia, especially in upland farms, but only in one case had he made a *post-mortem* examination. This revealed a large angioma extending into the vulva. The animal had lost a very considerable quantity of blood owing to the condition. With regard to spinal concussion, he had a case showing symptoms very similar to those described by Principal Craig. It occurred about three months ago and the animal was now much better, though still showing some inco-ordination of the limbs.

Mr. Roberts reminded the meeting that he had read a paper about two years ago on certain diseases of cattle in which he included what he considered was chronic hæmaturia. The disease occurred in Carnarvonshire and Merionethshire. The condition was differentiated from red water by rectal examination. This revealed the presence in the bladder of large mushroom-like tumours. These tumours, Mr. Roberts thought, were not as large now as those seen in years gone by. The disease occurred rarely in animals under ten years of age and was prevalent in the summer when the animals were left on poor pasture. He inclined to the view that it was a deficiency disease. He had never seen a case where there was not bracken on the farm.

Mr. Leonard Jones said he had come across cases of chronic hæmaturia in his practice and he had treated them as deficiency diseases, administering cod liver oil and lime salts. He had sent three specimens away for microscopical examination and the condition had been described as carcinoma. Possibly these were different conditions. He wished to ask whether bracken poisoning would not produce lesions in the bladder similar to those described in chronic hæmaturia.

Principal Craig, in replying, said he was very pleased with the nature of the discussion. It had elicited considerable information. Chronic hæmaturia was evidently present in North Wales, and it was a source of serious economic loss. A botanical survey and chemical analysis of the pasture would be useful in order to ascertain if there was a toxic agent present in the pasture. He agreed with Professor Share Jones that they would do well to look more into the matter of dietetics in connection with disease and he emphasised the value of clinical observation.

There was no evidence in this disease that bacteria were responsible for its production and it was far more likely that the etiology was related to some chemical agent in the herbage. It was interesting to note that bracken could always be found on the pasture, yet in districts where bracken poisoning was not uncommon, chronic hæmaturia was practically unknown. Bracken poisoning, of course, was an acute condition and there were numerous hæmorrhages in the tissues and organs of affected animals. It was impossible to explain the diminution in the size of the lesion in present-day cases, unless it was that the animals were sent to the butcher at an earlier age. They were still in the dark as to the cause and cure of the disease. If the cause was a vegetable toxin, then it must take a considerable time to set up the affection. As regards prevention, one would be interested to know what effect the application of quicklime to pasture would have in this country in reducing the incidence of chronic hæmaturia.

In concluding, Principal Craig thanked the members for their attentive hearing and he assured them that it had been a pleasure for him to be present that afternoon.

Mr. Edwards proposed and Mr. Mills seconded a vote of thanks to Principal Craig, which was carried unanimously, amid applause.

Exhibit.—Mr. Mills then exhibited some roots of the Water dropwort (*Oenanthe crocata*), which he had found in the intestines of a calf. Mr. Mills explained how three out of four calves grazing together had died within a short time of each other.

Thanks to the President.—The meeting terminated with a vote of thanks, proposed by Mr. Wynne, to the retiring President, Professor Share Jones, for his interest in the Society and for his able conduct of its business during the year. The Society was honoured by having had in him, as its President, the President also of the Royal College of Veterinary Surgeons. The vote was carried with acclamation.

Howel V. Hughes, *Hon. Secretary.*

Notes and News.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Jan. 27th—Meeting of the Editorial Committee, N.V.M.A., 4.30 p.m., at 10, Gray's Inn Square, W.C.1.

Jan. 30th—Meeting of the South-Eastern Division, N.V.M.A., at Tunbridge Wells.

Jan. 31st—Meeting of the Yorkshire Division, N.V.M.A., at Leeds.

Jan. 31st—Issue of overseas Voting Papers, R.C.V.S. Council Elections.

Feb. 1st—Meeting of the Scottish Branch, N.V.M.A., at Perth.

Feb. 6th—Meeting of the Central Division, N.V.M.A., at 10 Red Lion Square, W.C.1.

Feb. 7th—Annual Meeting of the Royal Counties Division, N.V.M.A., at Reading.

Postal Delivery of the "Record."

This Journal should reach members not later than second post on Saturday.

If delivered late, please return the wrapper to the Association's printers, Messrs. H. R. Grubb, Ltd., Poplar Walk, Croydon, who will take the matter up with a view to avoiding future delays.

Members should, however, continue to notify changes of address to 10, Gray's Inn Square, W.C. 1.

R.C.V.S. Obituary.

McDonnell, Francis Hugh, New South Wales, Australia. Graduated Dublin, July 24th, 1924. Died April 14th, 1929.

. . . . . .

Reynolds, Frederick George, Newlands, St. Ives, Hunts. Graduated London, 6th April, 1876. Died 18th January, 1930. Age 73 years.

. . . . . .

Rugg, George, of 92, Thornton Avenue, Bedford Park, W.4. Graduated London, 2nd April, 1873. Died at Great Chart, Ashford, Kent, 11th January, 1930. Age 76 years.

. . . . . .

Wortley. January 11th, at Ditchingham Hospital, Margery Holman, beloved wife of W. H. Wortley, M.R.C.V.S., Bungay.

Army Promotion Examinations.

It is notified in an Army Order that the periods of military history selected for next year's examinations for promotion of majors of the Royal Army Veterinary Corps are as follows:—

Majors, Royal Army Veterinary Corps. (In Sub-head (k) (ix), App. X. King's Regulations, 1928.) March, 1931:—"The Veterinary Services in Mesopotamia, as described in the Official Veterinary History of the Great War." October, 1931:—"The Veterinary Services in South, South-West, and East Africa, as described in the Official Veterinary History of the Great War."

A Prolific Cow.—A non-pedigree Shorthorn cow in the herd of Mr. T. A. Lord, Mains Hall, Poulton-le-Fylde, has a fine record for fecundity. Now eight years old, she has produced and reared seven calves, and is due to calve again about the end of May. At her first calving she had triplets (all heifers), the next year she produced twins, and single calves followed in each of the next two years. All the calves were well developed and have been sold as yearlings. It is interesting to note that this profitable cow was acquired for half-a-crown by her present owner from a man who was anxious to dispose of a newly-dropped calf.

The Editor acknowledges the receipt of the following:—

Communications from Professor J. Russell Grieg (Edinburgh), Mr. H. S. Robinson (Newport) and Mr. J. V. S. Rutter (Hereford).

Report of a meeting of the Lancashire Division, N.V.M.A., from Mr. J. Spruell, Hon. Secretary.

Report of a meeting of the Veterinary Medical Association of Ireland, from Professor J. J. O'Connor, Hon. Sec.

Report of a meeting of the North of Scotland Division, N.V.M.A., from Mr. J. McAllan, Hon. Secretary.